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SHARP 21N52-E1 SERVICE MANUAL

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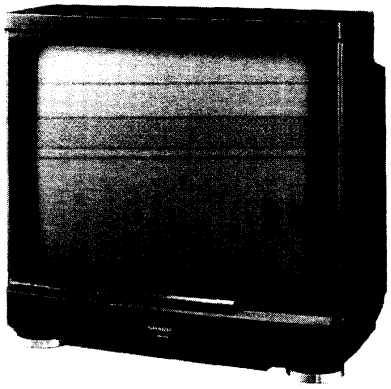
SHARP SERVICE MANUAL

S90M621N52E1/



21 SYSTEM COLOUR TELEVISION

Chassis No. 2IA- M

MODEL 21N52-E1

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

ELECTRICAL SPECIFICATIONS

Power Input ..... 110-240VAC 50/60Hz (Auto)
Power Consumption 107w
Convergence ..... Self Converging System
Focus ..... Bi-Potential, Uni-Potential Electrostatic
Sweep Deflection ..... Magnetic
Intermediate Frequencies
- Picture IF Carrier ..... 38.9M Hz
- Sound IF Carrier
  - 6.5MHz 32.4MHz
  - 6.0MHz 32.9MHz
  - 5.5MHz 33.4MHz
  - 4.5MHz 34.4MHz
- Colour Sub-Carrier
  - PAL/NTSC ..... 34.47M Hz
  - SECAM 34.494/34.65MHz
  - NTSC 35.32MHz

Audio Power Output Rating ..... 2.5W x 2 (Max.)
Speaker
- Size ..... . 8cm x 4cm Oval x 2 pcs
- Voice Coil Impedance ..... 8 ohms at 400 Hz

Specifications are subject to change without prior notice.

Aerial Input Impedance ,....., 75 ohm Unbalanced
Receiving Channels
- PAL-B/G, SECAM-B/G
  - VHF ..... E2 thru EI2
  - UHF ..... 21 thru 69
  - CATV ..... S1 thru S3, M1 thru M10 U1 thru U10
- PAL-D/K, SECAM-D/K
  - VHF ..... R1 thru R12
  - UHF ..... 21 thru 69
- PAL-I
  - VHF ..... (IRELAND): B thru J
  - UHF ..... (U.K., H.K.): 21 thru 69
- NTSC-M
  - VHF ..... (US): 2 thru 13
    (JAPAN): 1 thru 12
  - UHF ..... (US): 14 thru 83
    (JAPAN): 13 thru 62
  - CATV ..... A-6 thru A-1, A thru W, AA

Receiving Frequency
- VHF ..... 48.25 thru 301.25 MHz
- UHF ..... 471.25 thru 885.25 MHz

WARNING

The chassis in this receiver is partially hot. Use an isolation transformer between the line cord plug and power receptacle, when servicing this chassis.
To prevent electric shock, do not remove cover. No user - serviceable parts inside. Refer servicing to qualified service personnel.

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IMPORTANT SERVICE NOTES

Maintenance and repair of this receiver should be done by qualified service personnel only.

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove static charge from it by connecting a 10 kohm Resistor in series with an insulated wire (such as a test probe) between picture tube dag and 2nd anode lead. (AC line cord should be disconnected from AC outlet.)

1. **Picture tube in this receiver employs integral implosion protection.**
2. **Replace with tube of the same type number for continued safety.**
3. **Do not lift picture tube by the neck.**
4. **Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely.**

X-RAY

This receiver is designed so that any X-Ray radiation is kept to an absolute minimum. Since certain malfunctions or servicing may produce potentially hazardous radiation with prolonged exposure at close range, the following precautions should be observed:

1. **When repairing the circuit, be sure not to increase the high voltage to more than 27.3kV, (at cut-off) for the set.**
2. **To keep the set in a normal operation, be sure to make it function on 25.3kV ± 1.5kV (at beam 1.1mA) in the case of the set.**
   The set has been factory -Adjusted to the above-mentioned high voltage.
   ∴ If there is a possibility that the high voltage fluctuates as a result of the repairs, never forget to check for such high voltage after the work,
3. **Do not substitute a picture tube with unauthorized types and/or brands which may cause excess X-ray radiation.**

BEFORE RETURNING THE RECEIVER

Before returning the receiver to the user, perform the following safety checks.

1. **Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.**
2. **Inspect all protective devices such as non-metallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators etc.**

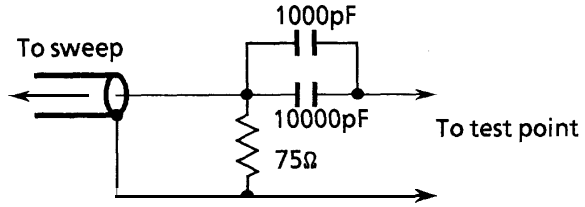
SERVICE ADJUSTMENT

PIF/AFT/SIF/AGC ADJUSTMENT

TUNER IFT COILS

The tuner has been factory preset (no adjustment is needed).

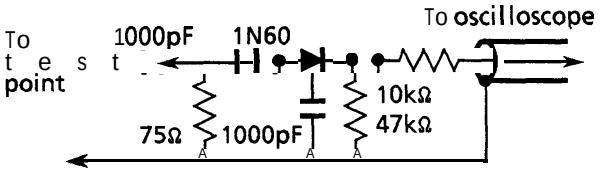
1. Set V_T voltage at 5V in V_H band.
2. Connect sweep generator's output to the test point of tuner, by using a 75Ω DC cut probe.



Connection Diagram *of 75Ω DC Cut Probe.*

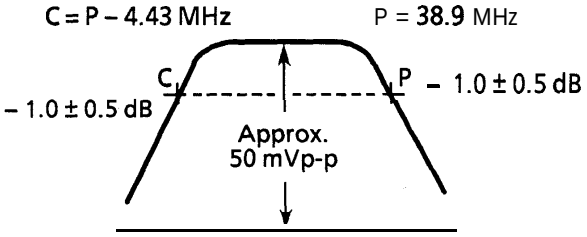
*** NOTE:**
The sweep generator's probe should be **grounded closely to the tuner test point.**

3. Output level of sweep generator: 80 dB
4. Connect response lead (low impedance probe **with detector)** to the collector of Q1201 (in IF unit).



Connection Diagram of Low Impedance Probe (with Detector).

5. PIF AGC:
   Apply DC 4.5V to pin (1) of IC1201 (in IF unit).
6. RF AGC:
   Apply DC 4.0V (about, – 20dB) to the tuner AGC terminal.
7. Connect 10k ohm resistor between base of Q203 and 12V line.
8. Adjust the tuner IF coils to obtain the waveform as shown figure below.
   NOTE:
   For the adjustment, keep the tuner covered with its lid.

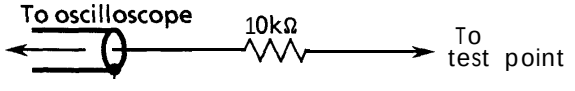


Adjust so that "P" and "C" are at the same /eve/.

P-DETECTOR COIL: T1202

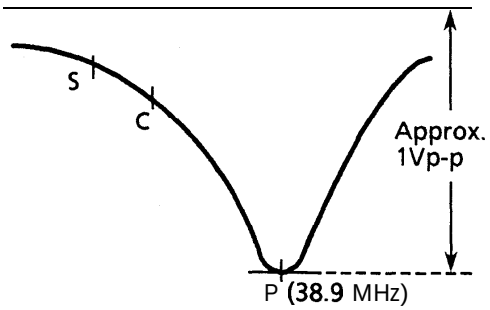
This coil (in IF unit) has been factory preset (no adjustment is needed).

1. Connect sweep generator's output to pin (5) of IC1201.
   - Probe in use: 75Ω DC cut probe
   - Sweep output level: 90 dB
2. PIF AGC:
   Apply 4.5V DC to pin (1) of IC1201.
3. Have AFT muted.
   AFT is muted if pin (2) of IF unit is grounded.
4. Connect response lead to TP401.
   The response lead in use should be a direct probe with a resistor of 10k ohms included.



10 kΩ* Direct *Probe.

5. Adjust T1202 so that 38.9 MHz signal is at maximum (±50 kHz).

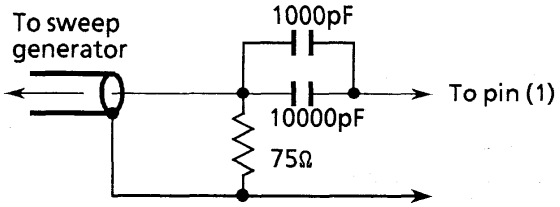


* Adjust PIF AGC voltage so that the output waveform is of approx. 1 Vp-p.

PIF/AFT/SIF/AGC ADJUSTMENT (Continued)

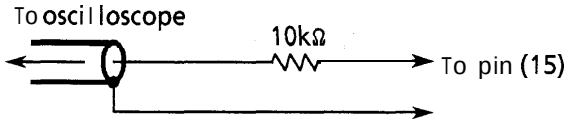
AFT COIL ROUOGH ADJUSTMENT: T1201

1. Connect sweep generator's output to pin (14) of IF unit.
   - Probe in use: 75Ω DC cut probe
   - Sweep output level: 70 dB

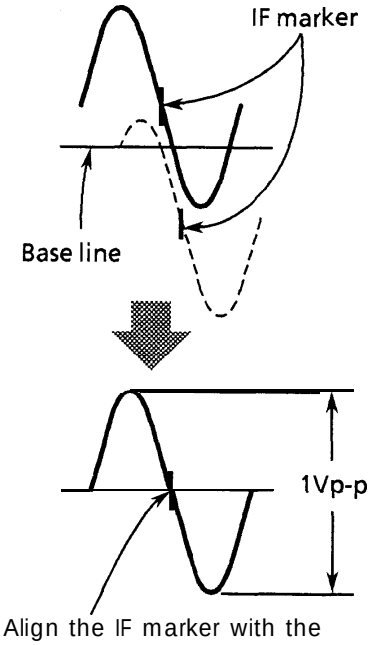


Connection Diagram of 75Ω DC Cut Probe.

2. Apply 4.5V DC (PIF AGC) to TP1203 (pin (1) of IC201).
3. Connect response lead to pin (1) of IF unit. (The response lead should be a direct probe with a 1 Ok ohm resistor included.)
   - Tune off AFT Mute.



4. Adjust T1201 to align the marker with the base line.



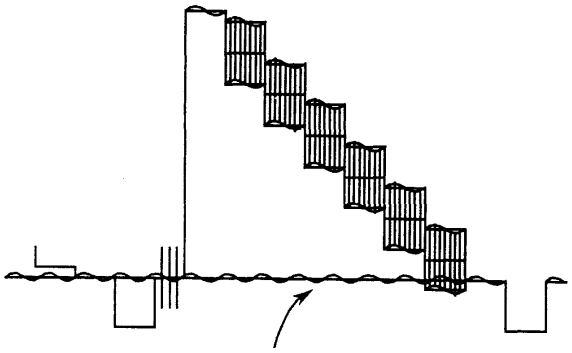
Align the IF marker with the base line.

- Adjust the sweep generator's sweep range to obtain normal S-curve on the oscilloscope screen.
- Adjust the IF AGC voltage so that the S-curve's amplitude be approx. 1Vp-p.

AFT COIL: T1201

Before this adjustment, the AFT coil (rough adjustment) must have been completed.

1. Receive "PAL COLOUR BAR" signal with colour bar generator.
   - Signal strength: Over 55dB, Below 80dB
2. Connect oscilloscope to TP401.
   - Oscilloscope range: 0.5 V/DIV
   - Sweep time: 20 µsec/DIV
   - Synchronization: Horizontal sync.
3. Connect the output of SSG (Standard Signal Generator) to the tuner IF output terminal across a capacitor of 1 pF.
   - SSG output frequency: 38.9 MHz (CW)
     38.9 MHz ± 5 kHz
   - SSG output level: approx. 50 dB
4. Adjustment error: 38.900 MHz ± 25 kHz.
   * When the preset switch is set at U or V position, AFT is turned off.
5. Set the preset switch at V position and adjust FINE button (Up or Down) of tuning control so that the output waveform suffers no beating.
6. Set the preset switch at NORMAL position.
7. Adjust T1201 so that no beating is caused at the output waveform.

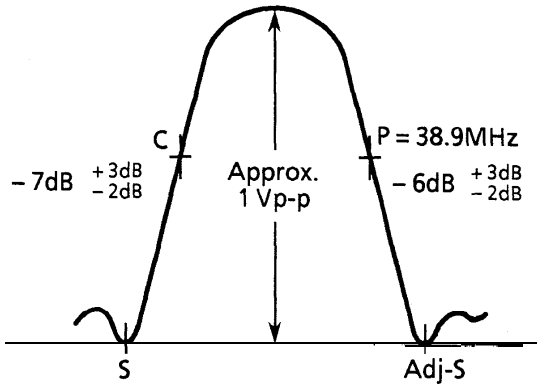


Finely adjust to make zero the beating

PIF/AFT/SIF/AGC ADJUSTMENT (Continued)

PIF OVERALL WAVEFORM

1. Set V_T voltage at 5V in V_H band.
2. Connect sweep generator's output to the test point of tuner.
   - Probe in use: 75Ω DC cut probe
   - Sweep output level: 70dB
3. Connect response lead to TP401.
   The response lead in use should be a direct probe with a resistor of 1 Ok ohms included.
4. RF AGC:
   Apply approx. 4.0V DC to the tuner AGC terminal.
5. PIF AGC:
   Apply approx. 4.5V DC to pin (1) of IC1201 in IF unit.
6. Connect a 120 ohm damping resistor in parallel to R1213 (in IF unit).
   NOTE:
   Cut the resistor's **leads as short as possible.**
7. Turn off AFT:
   AFT is turned off if pin (4) of IC1201 in IF unit is grounded.
8. Adjust IF AGC voltage so that the output waveform is of approx. 1Vp-p.
9. Check that the overall waveform is as shown in Figure below.

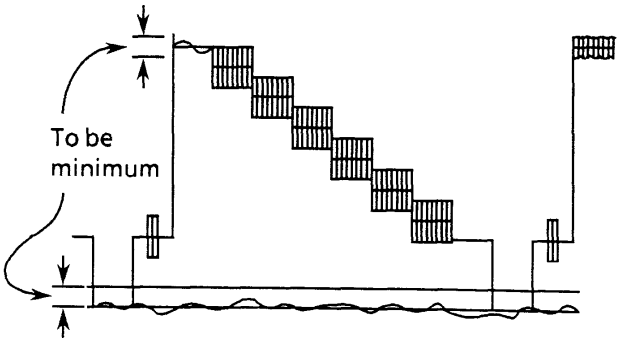


RF-AGC CUT-IN CONTROL: R218

1. Receive "PAL COLOUR BAR" signal with colour bar generator.
   - Signal strength: 53dB ± 1dB (with 75Ω terminated)
2. Connect DC voltmeter to the tuner AGC terminal (TP201).
   (Full scale: 10V)
3. Turn R218 so that the voltmeter reads the maximum output.
4. Slowly turn R218 in the opposite direction until the voltmeter begins to decrease its reading; then stop turning of R218.
5. Set the signal strength at 65dB ± 2dB, and check that no noise appears.
6. Receive "MONOSCOPE PATTERN" signal, and check that no noise appears.
   - Signal strength: 65dB ± 2dB
7. Set the signal strength at 90dB to 95dB and check that there appears no crossmodulation beating.
   - AGC control value: 53dB ± 1 dB. (with 75Ω terminated)

"NTSC" 4.5MHz TRAP: T201

1. Receive "NTSC COLOUR BAR" signal with colour bar generator.
   - Signal strength: Over 55dB, Below 80dB.
2. Connect oscilloscope to TP401.
   - Voltage range: 0.5V/div.
   - Sweep time: 20μsec/div.
   - Synchronization: Horizontal sync.
3. Adjust T201 so that the oscilloscope waveform's 920kHz beat be minimum.



PIF/AFT/SIF/AGC ADJUSTMENT (Continued)

SOUND DETECTOR COIL: T1301

This coil (in IF unit) has been factory preset (no adjustment is basically needed).

1. Connect SSG output to pin (16) of IC1201.
   - The probe in use should be a 75Ω DC cut probe.
   - SSG output level: 80dB (5.5 MHz CW)
2. IF AGC:
   Apply 4.5V DC to pin (1) of IC1201.
3. Connect DC voltmeter to pin (9) of IC1201.
   (Full scale: 10V)
4. AUDIO-MUTE ON:
   Have pin (4) of IF unit **grounded, and read the** value then available on the voltmeter (VTVM). It **should be approx. 4.5V.**
5. AUDIO-MUTE OFF:
   Remove the grounding at pin (4) of IF unit.
6. Adjust T301 so that the voltmeter indicates the same value as in step 4 above.

AUDIO MUTE CHECKING

1. Receive "PAL COLOUR BAR" signal.
2. Set the Sound control at maximum position.
3. Stop reception of "PAL COLOUR BAR" signal.
   (Pull out the antenna)
4. Check that no output of 400 Hz signal is heard from the speaker.

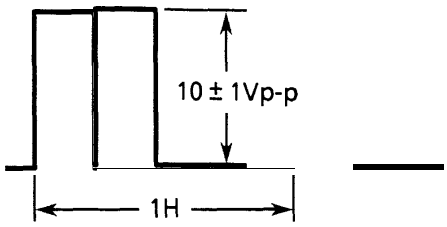
VIDEO CIRCUIT ADJUSTMENT

CRT CUT-OFF ADJUSTMENT

- R853: Red Bias control
- R859: Green Bias control
- R865: Blue Bias control
- Screen control (a part of T602)
- R857: Green Drive control
- R863: Blue Drive control

*** Note:**
Prior to this adjustment, warm up the unit with the beam current of more than 700μA for more than 30 minutes.

1. Receive "MONOSCOPE PATTERN" signal with pattern generator.
2. Set Red Bias control at MIN position.
   Set Green Bias control at MIN position.
   Set Blue Bias control at MIN position.
   Set Green Drive control at CENTER position.
   Set Blue Drive control at CENTER position.
3. Turn the "N" key on the remote controller.
4. Set the Screen control at MIN position.
5. Connect the oscilloscope to TP852 (red cathode).
6. Turn S401 (service switch) at the horizontal line position.
7. Adjust Sub-Brightness control R425 to obtain a blanking pulse level of 10 ± 1Vp-p at TP852.



8. Disconnect the oscilloscope fromTP852.
9. Slowly turn the Screen control clockwise until the horizontal raster appears slightly, and stop it.
10. Here, one of the three colours (red, blue, green) appears first as the Screen control is turned. So, touching off the Bias control belonging to the first colour, use and move the other two controls so that the horizontal raster becomes white.
11. Turn the Screen control counterclockwise until the horizontal raster disappears, and stop it.

WHITE BALANCE AND BACK GROUND

- R857: Green Drive control
- R863: Blue Drive control
- R436: Sub Contrast control

* Note:
Prior to this adjustment, warm up the unit with the beam current of more than 700μA for more than 30 minutes.

I. Receive "MONOSCOPE PATTERN" signal with pattern generator..
2. Set the Contrast control and Brightness control at MAX position.
3. Connect ammeter to TP601 and TP602.
   (Full scale: 3 mA)
4. Adjust Sub-Contrast control so that the beam current becomes 1.1mA (rough adjustment).
5. Adjust Green Drive control and Blue Drive control so that the colour temperature is at 9300°K. (High beam: 1.1mA).
6. Adjust the Contrast control and Brightness control so that the beam current is approx. 200μA, and check that the colour temperature is at 9300°K. If the temperature is not at 9300°K, go back to "CRT CUT-OFF ADJUSTMENT" and repeat the adjustment.
   (X = 0.285, Y = 0.292)

SUB-CONTRAST CONTROL: R436

*** Note:**
Prior to this adjustment, warm up the unit with the beam current of more than 700μA for more than 30 minutes.

1. Receive "MONOSCOPE PATTERN" signal with pattern generator..
2. Set the Contrast and Brightness controls at MAX position.
3. Connect beam ammeter to TP601 (–) and TP602 (+).
   (Full scale: 3 mA)
4. Adjust Sub-Contrast control so that the beam current becomes 1.1mA.

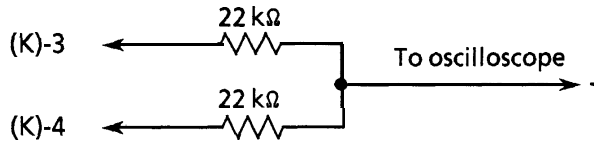
CHROMA CIRCUIT ADJUSTMENT "PAL"

PAL CHROMA ADJUSTMENT

- R806: 1 H-delay amp. control
- T801: 1 H-delay phase control

Note: **PIF/AFT/AGC** adjustments should have been completed before starting this adjustment.

1. Receive the "PAL COLOUR BAR" signal with colour bar generator.
2. Connect the following resistance matrix to pins 3 and 4 of the connector (K), to which an oscilloscope is connected.



Resistance Matrix

3. Set service switch S401 at the Video Cut position to cut-off the Y-signal.
4. Turn on the "N" key the remote controller.
5. Adjust the Colour control key of the remote controller so that the output waveform of colour difference signal becomes 2.5Vp-p.
6. Adjust 1H-delay amp. control (R806) and 1 H-delay phase control (T801) so that the output waveform shown in Fig. ***a*** is corrected to that shown in Fig. ***b***.
7. Return S401 to CENTER position.

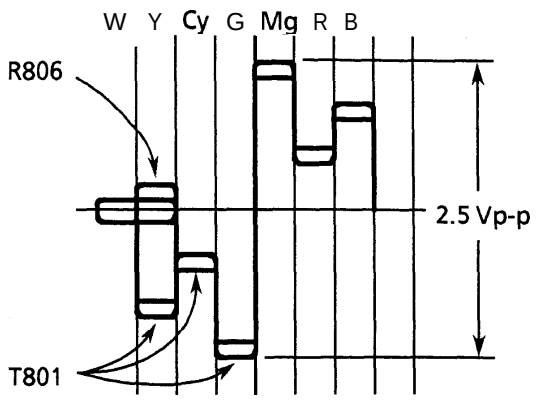


Figure a. Waveform before the adjustment

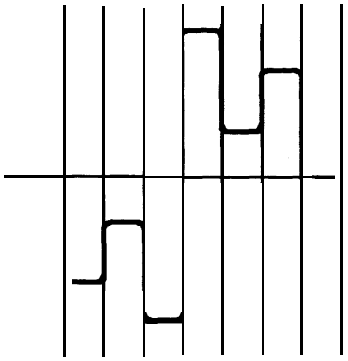
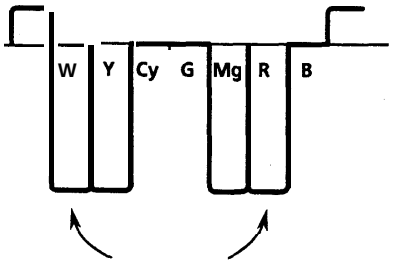


Figure b. Waveform after the adjustment

PAL SUB-COLOUR ADJUSTMENT: R802

1. Receive the "PAL COLOUR BAR" signal with colour bar generator.
2. Turn on the "N" key on the remote controller.
3. Connect oscilloscope to the TP852 (red cathode).
   - Voltage Range: 20V/div.
   - Sweep time: 20µsec/div.
4. Adjust R802 so that the white signal (75%) and red signal have the same level.

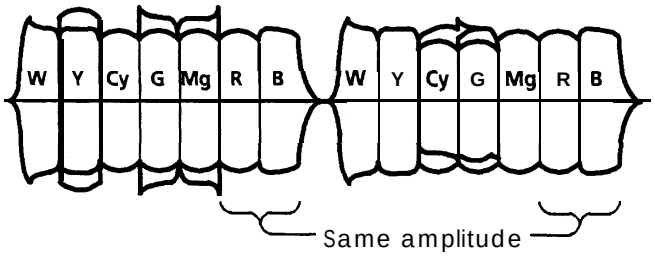


Same level for the white and red outputs.

CHROMA CIRCUIT ADJUSTMENT "SECAM"

BELL FILTER ADJUSTMENT: T903

1. Receive "SECAM COLOUR BAR" signal with colour bar generator.
2. Connect the oscilloscope to TP901 with the following settings.
   - Voltage Range: 0.05 V/div., AC
   - Sweep Time: 20µsec/div.
   - Probe: I/I 0 (30pF, I 0MΩ or more)
3. Adjust the Bell Filter (T903) so that the Red and Blue portions of the colour bar signal should have the same amplitude.



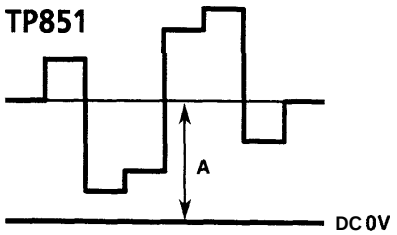
SECAM KILLER ADJUSTMENT: T904

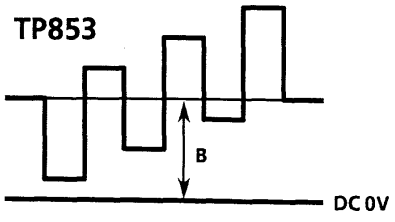
1. Receive "SECAM COLOUR BAR" signal with colour bar generator.
2. Connect the oscilloscope to TP902 with the following settings.
   - Voltage Range: 1V/div., DC
     (Adjust vertical position properly.)
   - Sweep Time: 20 µsec/div.
3. Adjust T904 to obtain maximum DC voltage (approx. 7.5V) at TP902.

B-Y (T901), R-Y (T902) DISCRIMINATOR ADJUSTMENT

Note: Connect a 0.001µF capacitor to TP851 and TP853 respectively to filter out interference noise.

1. Receive "SECAM COLOUR BAR" signal with colour generator.
2. Connect the oscilloscope (with two channels) to TP851 (R-Y) and the TP853 (B-Y), both located on the CRT Socket Unit (PWB-B) of the set.
   - Voltage Range: 2V/div., DC
   - Sweep Time: IO µsec/div.
3. Set service switch S401 at the Video Cut position to cut-off the Y-signal.
4. Set both the Contrast and Brightness controls to their maximum positions.
5. Adjust T901 and T902 so that the DC output levels obtained when the colour control is set to minimum (black and white level) and those when set to 100% colour saturation become the same.
6. Return S401 to CENTER position.

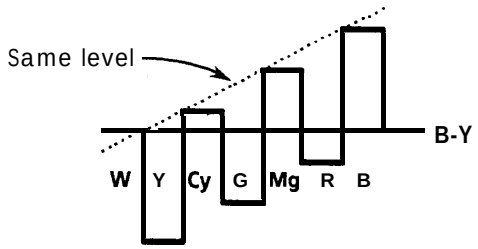




CHROMA CIRCUIT ADJUSTMENT "NTSC"

SUB-HUE: R835

1. Receive "NTSC COLOUR BAR" signal with colour generator..
2. Connect the oscilloscope to TP853 (B-Y).
3. Turn on the "N" key on the remote controller.
4. Set service switch S401 at the Video Cut position to cut-off the Y-signal.
5. Operating the Colour control key on the remote controller, adjust the B-Y waveform to approx. 3Vp-p.
6. Adjust Sub-Hue control R835 so that the waveform is obtained.
7. Return S401 to CENTER (normal) position.

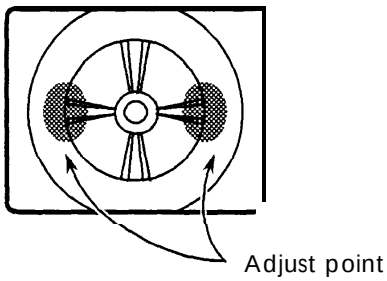


ADJUSTMENT OF DEFLECTION LOOP

Note; During the adjustment, keep the unit facing the east.

FOCUS ADJUSTMENT

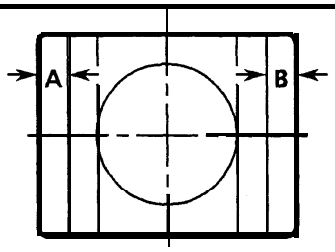
1. Receive "MONO SCOPE PATTERN" signal.
2. Set Contrast and Brightness controls at CENTER position.
3. Adjust Focus control to have best focus at the central area of CRT.



HORIZONTAL CENTERING CONTROL: R602

This adjustment should be performed after the purity and convergence adjustments.

1. Receive "MONO SCOPE PATTERN" signal.
2. Adjust R602 so that the horizontal center of picture is at the position which gives the relation of A = B .



VERTICAL LINEARITY CONTROL: R526

1. Receive "MONO SCOPE PATTERN" signal.
2. Adjust R526 so that the vertical linearity of picture is at best point.

VERTICAL SIZE CONTROL: R503

1. Receive "MONO SCOPE PATTERN" signal.
2. Set the Brightness and Contrast controls at maximum position.
3. Adjust R503 so that the vertical size of picture is at best point.
   - Vertical size: 8% TYP (Max. 10%)

VERTICAL CENTERING CONTROL: S501

This adjustment should be performed after the purity and convergence adjustments.

1. Receive "MONO SCOPE PATTERN" signal.
2. Adjust S501 so that the vertical center of picture is at the geometrical center of screen.

PURITY ADJUSTMENT

Note: During the adjustment, keep the unit facing the east.

PURITY ADJUSTMENT

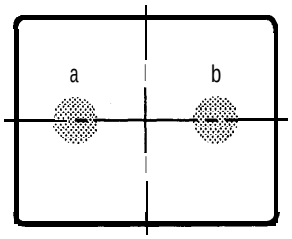
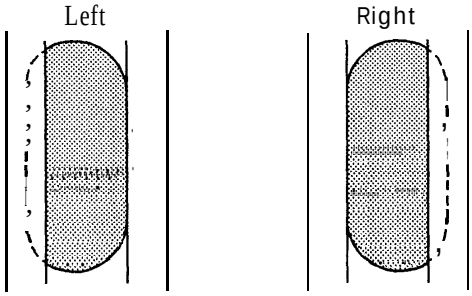
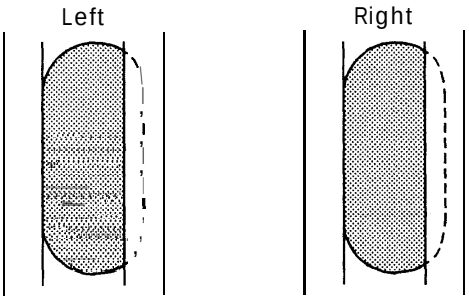


Figure A.



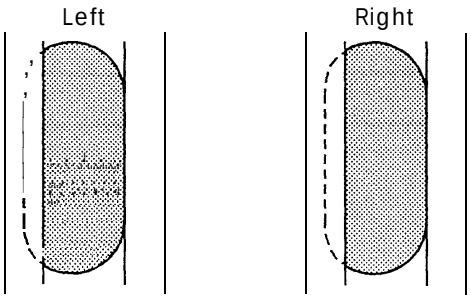
The beam landing is shifted outwards.

Figure B.



The beam landing is shifted to right.

Figure C.



The beam landing is shifted to left.

Figure D.

1. Prior to the purity adjustment, warm up the unit with beam current of more than 700 µA, for more than 30 minutes.
2. Receive the green signal alone and adjust the beam current to approx. 770 µA.
3. Fully degauss the CRT with the degaussing coil.
4. Before the purity adjustment, it is needed to roughly adjust the static convergence.
5. Set the purity magnet at the position which gives zero (0) magnetic field.

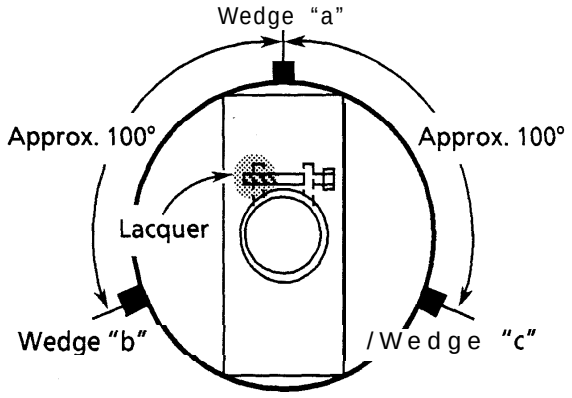
Adjustment

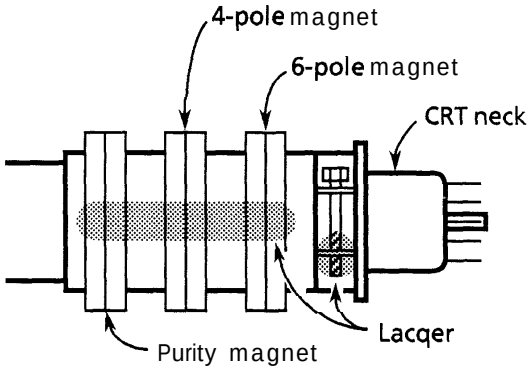
6. Observe the green spots ("a" and "b") with a microscope as shown Fig. A, and adjust the purity magnet so that they are at the specified landing position.
7. If the right and left green spots are both deviated outwards from their landing positions as shown in ***Fig. B,*** push the deflection yoke forwards until their positions are corrected.
8. If the beam landing is shifted to right or left as shown in ***Figs. C*** and ***D,*** adjust the opening degree of the purity magnet so that the beam landing is correctly positioned.
9. Adjust the purity magnet so that the beam landing is correct at either of the central part, right and left parts of screen, then check that the green beams at four corners of screen are all correctly positioned.
   Finally, check that the beam landing at any pat of screen is satisfactory with the Rank "B" specifications.
10. If the green beam is positioned to mix with the other colour, pull the deflection yoke backward.
    - Outside of the specified landing:
      To front of the deflection yoke.
    - inside of the specified landing:
      To back of the deflection yoke.
11. Set the raster rotation at "0" position (with the unit facing the east).
12. Tighten the screws of the deflection coil.
    Tightening torque: 11kg ± 2 kg.

CONVERGENCE ADJUSTMENT

Note: During the adjustment, keep the unit facing the east.

CONVERGENCE ADJUSTMENT





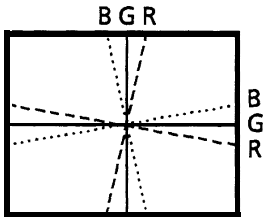


Figure a.

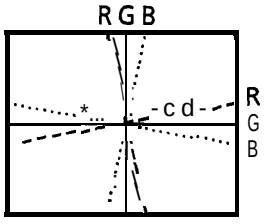


Figure b.

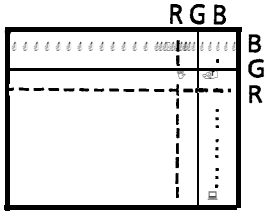
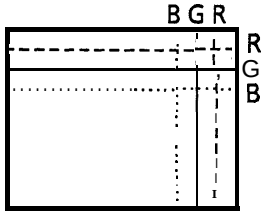


Figure c.



Figured.

This adjustment should be performed after the purity magnet adjustment.

1. Receive "CROSSHATCH PATTERN" signal.
2. Set. the Brightness control and Contrast control at MAX position.

STATIC CONVERGENCE

3. Adjust the opening degree of the 4-pole magnet and rotate the magnet to converge red and blue lines.
4. Adjust the opening degree of the 6-pole magnet and rotate the magnet to converge red, blue and green lines.

DYNAMIC CONVERGENCE

5. Dynamic convergence (convergence of the three colour fields) at the edges of CRT screen is accomplished in the following manner.

Convergence in *Fig. a:*

insert wedge"a" between the deflection yoke and CRT, and tilt the deflection yoke upward until the mis-convergence shown in ***Fig. a*** is corrected.

Convergence in *Fig. b*:

Insert wedges "b" and "c" between the deflection yoke and CRT, and tilt the deflection yoke until the mis-convergence shown in ***Fig. b*** is corrected.

Convergence in *Fig. c*:

Insert wedge "c" deeply between the deflection yoke and CRT, and tilt the deflection yoke to right until the mis-convergence shown in ***Fig.*** c is corrected.

Convergence in *Fig. d*:

Insert wedge "b" deeply between the deflection yoke and CRT, and tilt the deflection yoke to left until the mis-convergence shown in ***Fig. d*** is corrected.

6. Stick the three wedges onto the CRT, and apply glass tapes thereon.
7. Apply lacquer to the deflection yoke screw, magnet unit (made of purity, 4-pole and 6-pole magnets) and magnet unit screw.

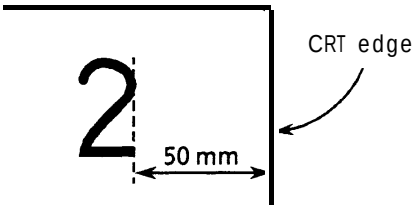
After the adjustment, receive either the Red or the Blue signal and check that there is no mixture with the other colour signal.

CRT DISPLAY ADJUSTMENT

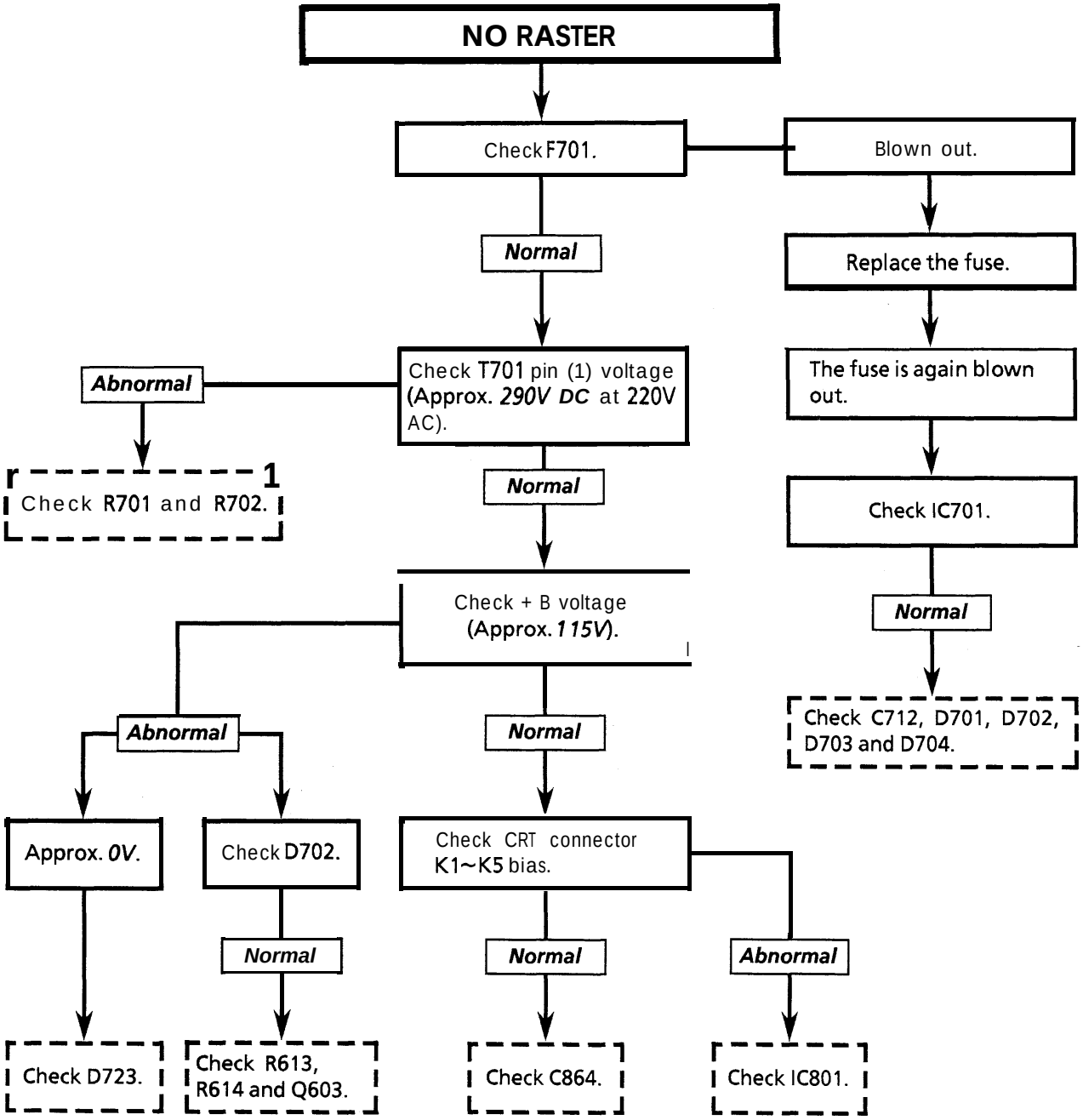
Note; *During* **the adjustment, keep the unit facing the east.**

SIGN POSITION CONTROL: RI 017

1. Set the channel number at 2.
2. Display the channel sign by means of the channel call of remote control on the screen.
3. Adjust the sign position by R1017 so that it is set 50 mm away from the CRT edge.

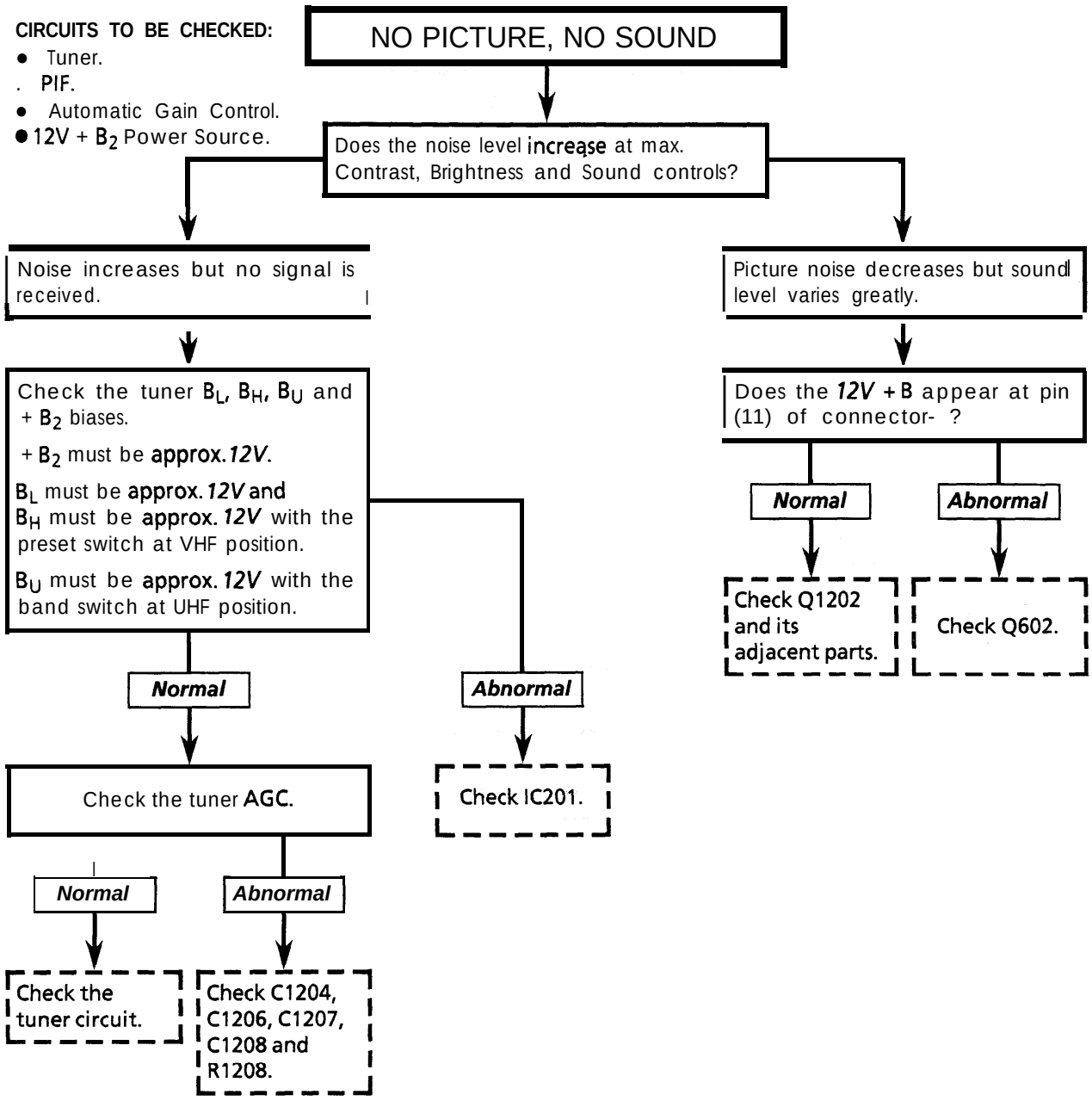


TROUBLE SHOOTING TABLE

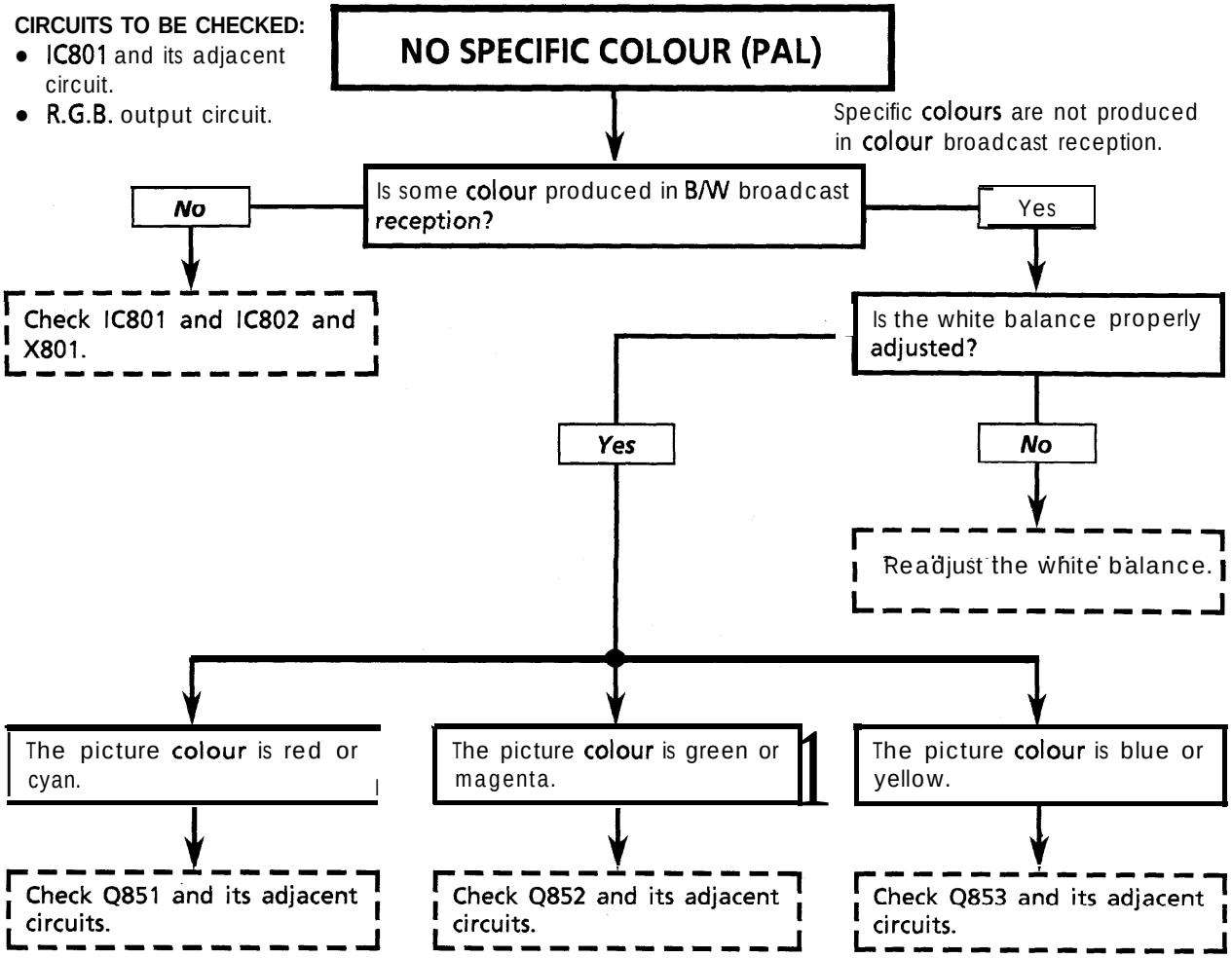


CIRCUITS TO BE CHECKED:

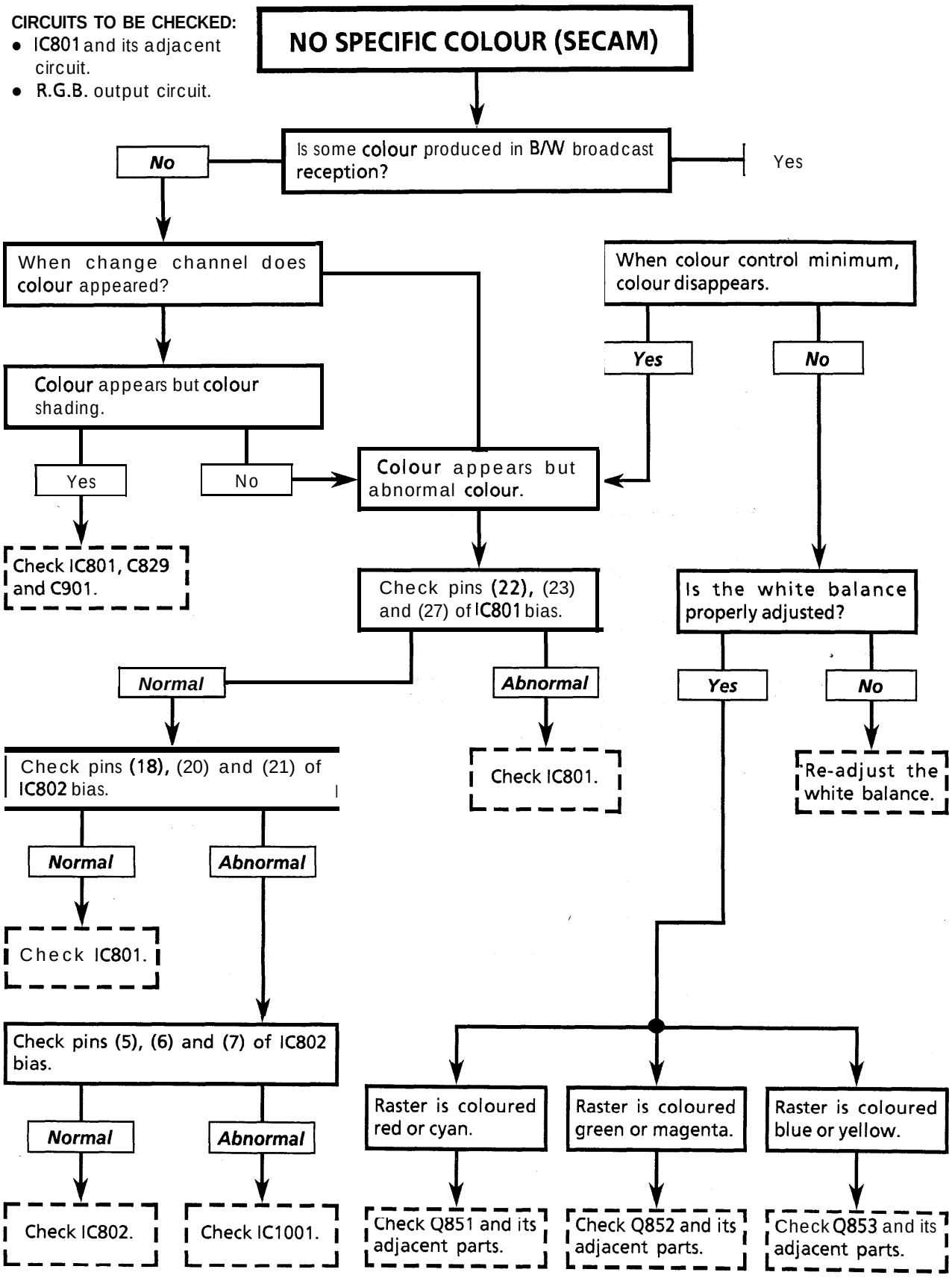
- Tuner.
- PIF.
- Automatic Gain Control.
- 12V + B_2 Power Source.


NO PICTURE, NO SOUND
Does the noise level increase at max. Contrast, Brightness and Sound controls?
Noise increases but no signal is received.
Picture noise decreases but sound level varies greatly.
Check the tuner B_L, B_H, B_U and + B_2 biases.
+ B_2 must be approx. 12V.
B_L must be approx. 12V and B_H must be approx. 12V with the preset switch at VHF position.
B_U must be approx. 12V with the band switch at UHF position.
Does the 12V + B appear at pin (11) of connector- ?
Normal
Abnormal
Normal
Abnormal
Check Q1202 and its adjacent parts.
Check Q602.
Check the tuner AGC.
Check IC201.
Normal
Abnormal
Check the tuner circuit.
Check C1204, C1206, C1207, C1208 and R1208.

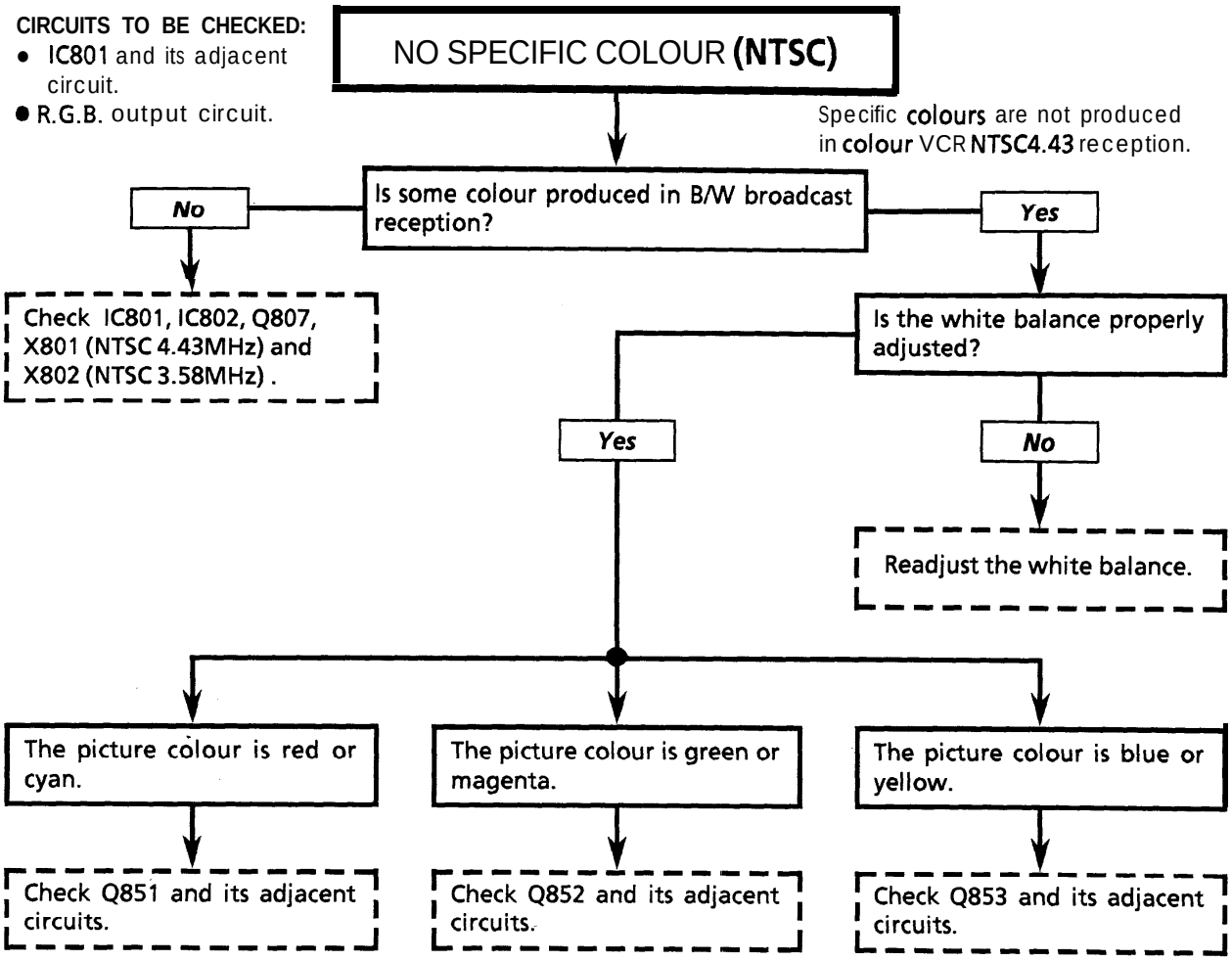
CIRCUITS TO BE CHECKED:
- IC801 and its adjacent circuit.
- R.G.B. output circuit.


NO SPECIFIC COLOUR (PAL)
Specific colours are not produced in colour broadcast reception.
Is some colour produced in B/W broadcast reception?
No
Yes
Check IC801 and IC802 and X801.
Is the white balance properly adjusted?
Yes
No
Readjust the white balance.
The picture colour is red or cyan.
The picture colour is green or magenta.
The picture colour is blue or yellow.
Check Q851 and its adjacent circuits.
Check Q852 and its adjacent circuits.
Check Q853 and its adjacent circuits.

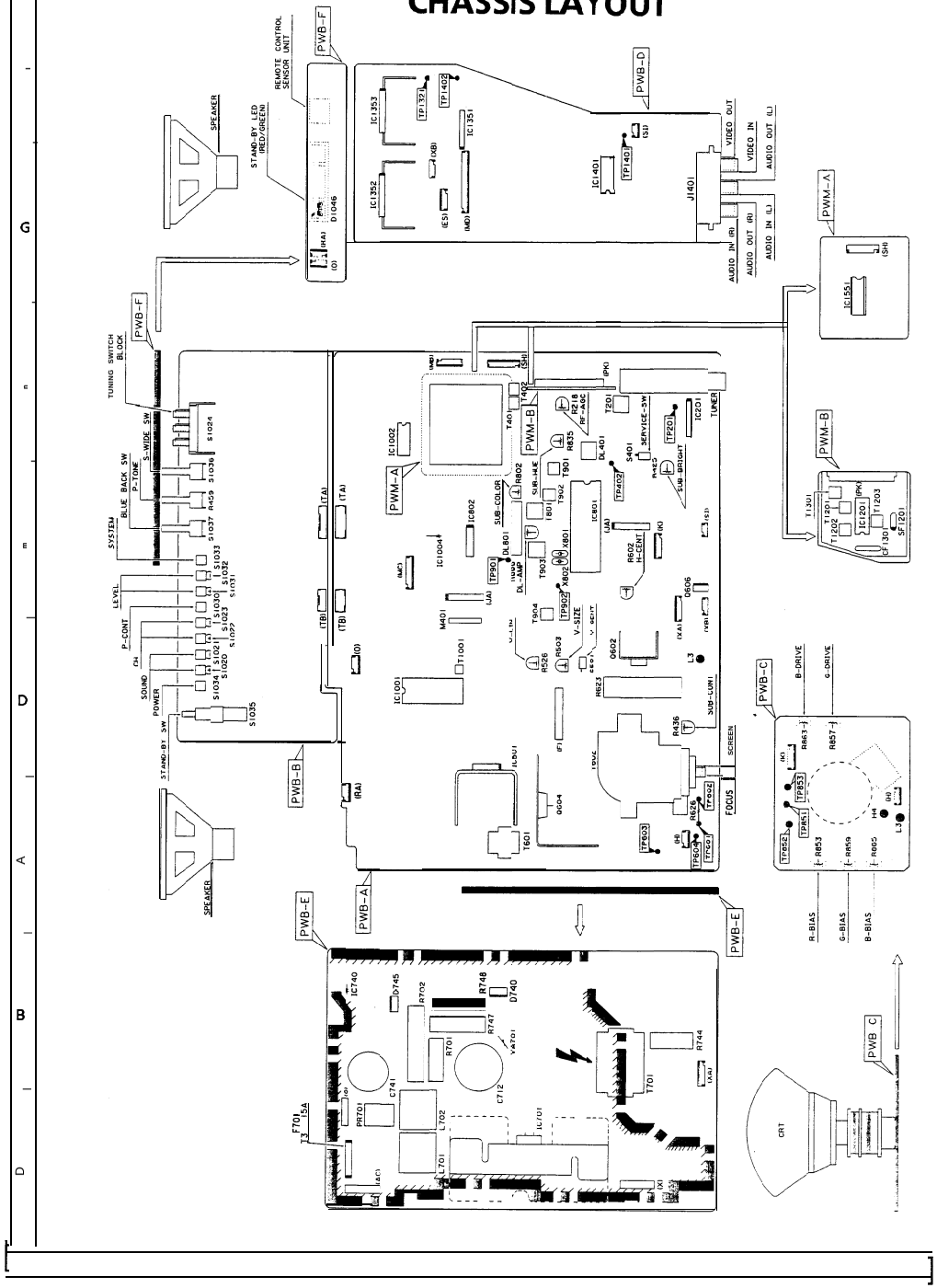
CIRCUITS TO BE CHECKED:
- IC801 and its adjacent circuit.
- R.G.B. output circuit.



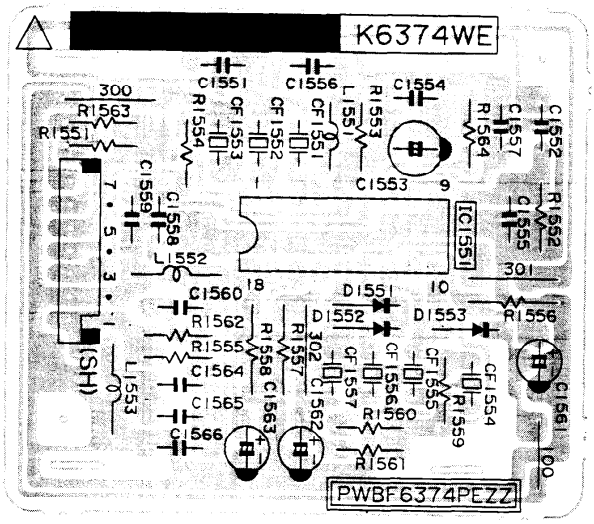
CIRCUITS TO BE CHECKED:
- IC801 and its adjacent circuit.
- R.G.B. output circuit.


NO SPECIFIC COLOUR (NTSC)
Specific colours are not produced in colour VCR NTSC4.43 reception.
Is some colour produced in B/W broadcast reception?
No
Yes
Check IC801, IC802, Q807, X801 (NTSC 4.43MHz) and X802 (NTSC 3.58MHz).
Is the white balance properly adjusted?
Yes
No
Readjust the white balance.
The picture colour is red or cyan.
The picture colour is green or magenta.
The picture colour is blue or yellow.
Check Q851 and its adjacent circuits.
Check Q852 and its adjacent circuits.
Check Q853 and its adjacent circuits.

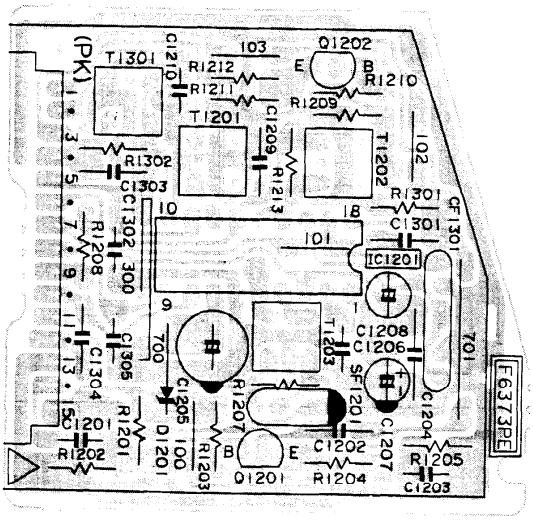
CHASSIS LAYOUT



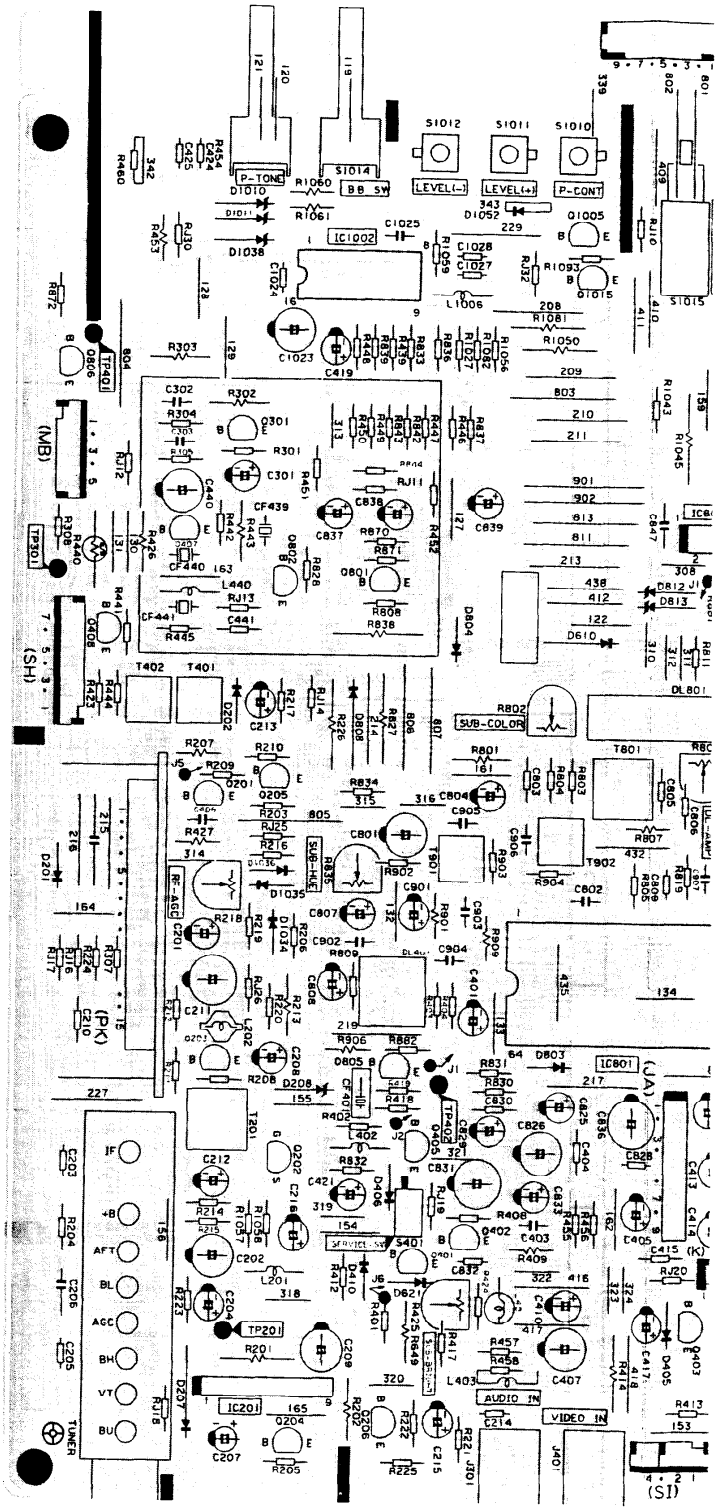
PRINTED WIRING BOARD ASSEMBLIES

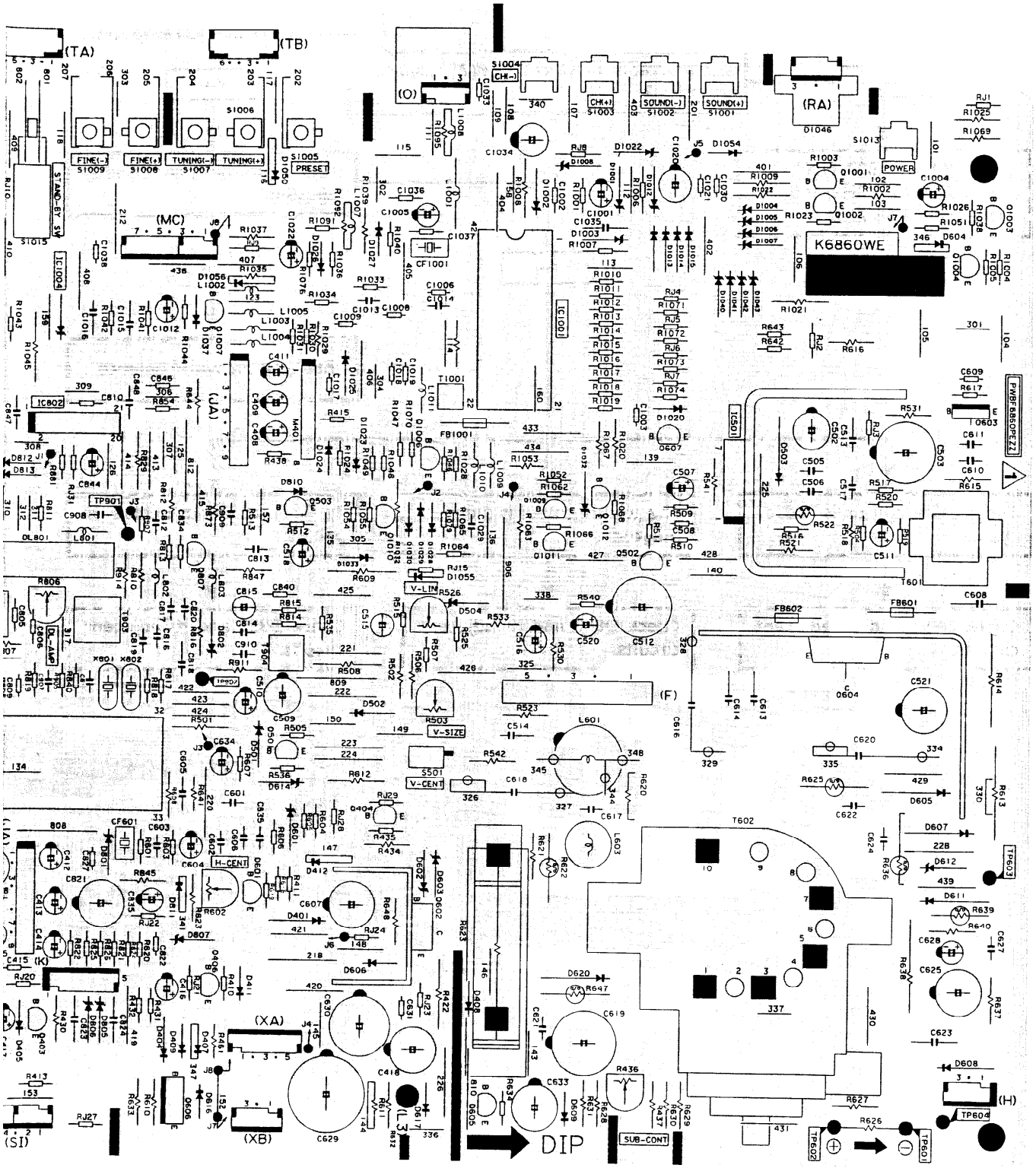


PWM-A Wiring Side



PWM-B Wiring Side

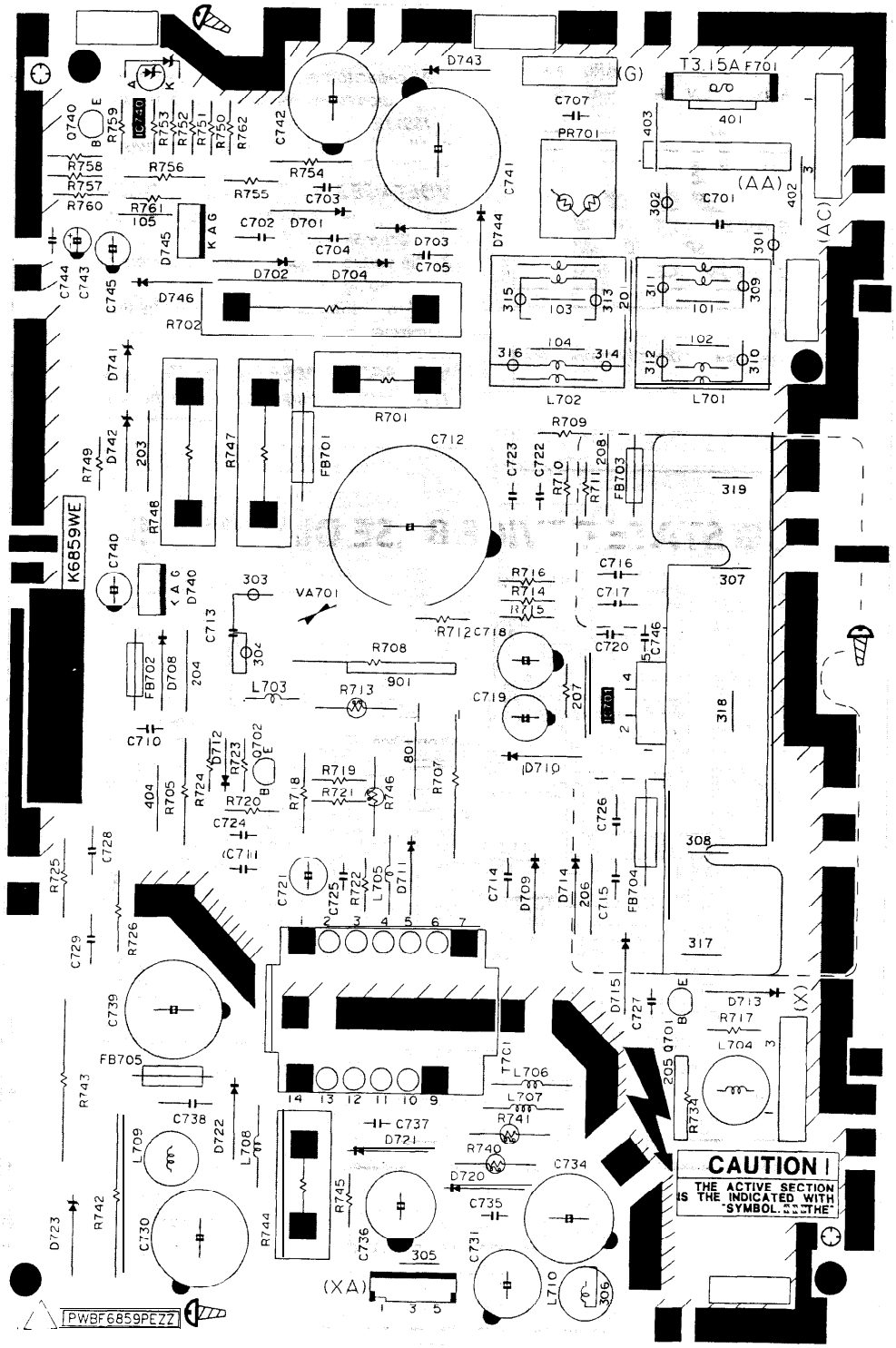




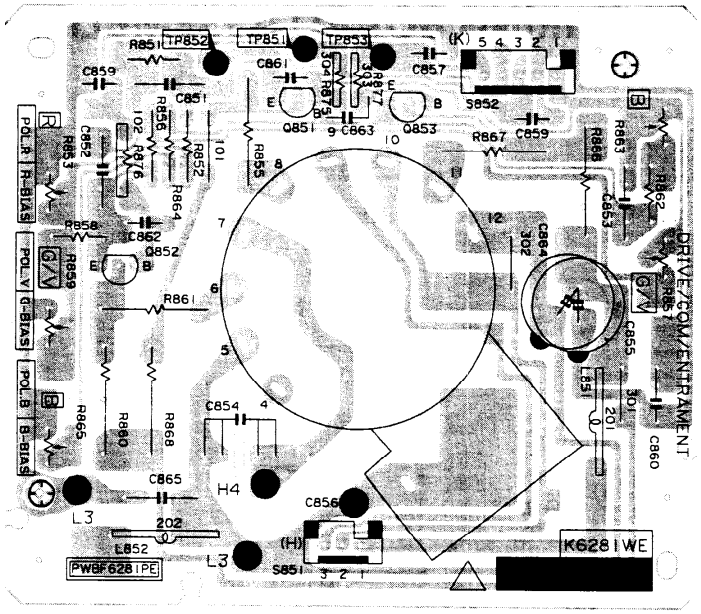
PWB-A Wiring Side

7	8	9	10	11	12

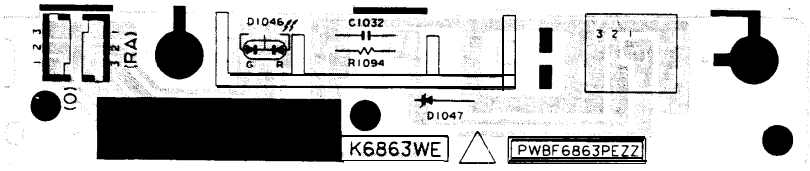
PRINTED WIRING BOARD ASSEMBLIES (Continued)



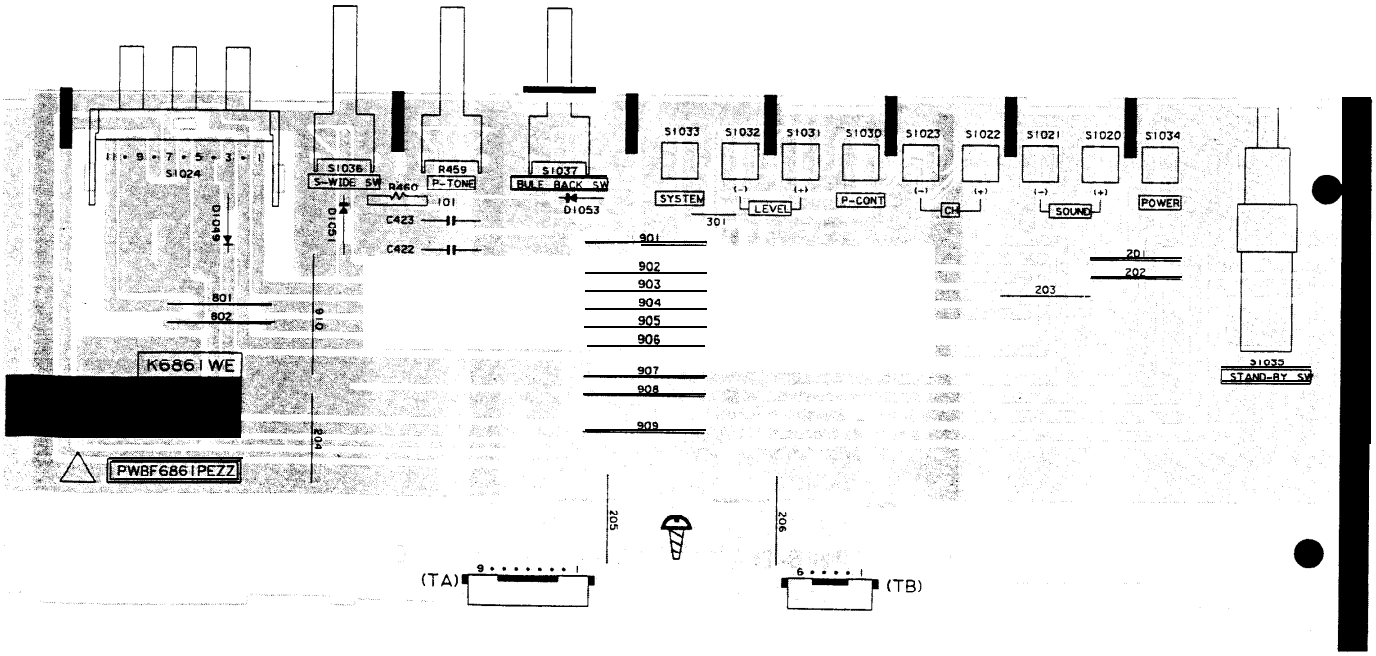
PWB-E Wiring Side



PWB-C Wiring Side



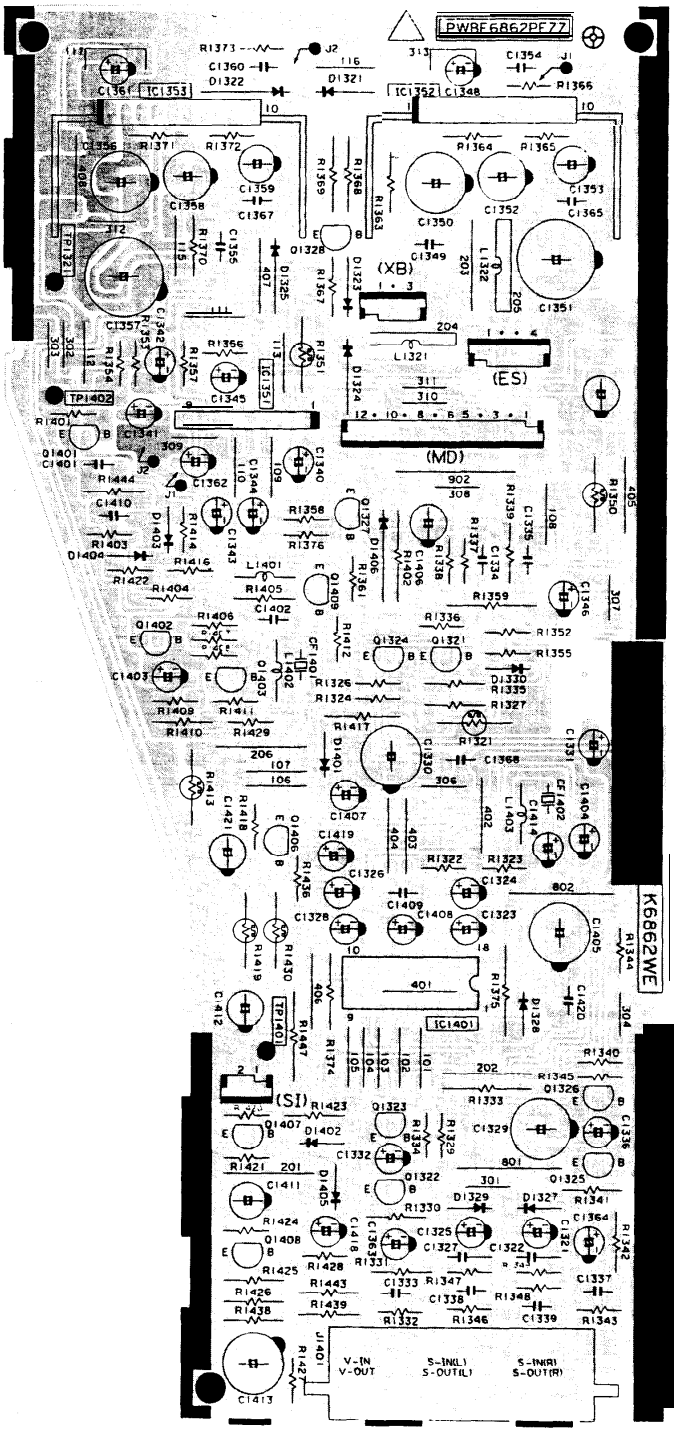
PWB-F Wiring Side



PWB-B Wiring Side

7	8	9	10	11	12

PRINTED WIRING BOARD ASSEMBLIES (Continued)



PWB-D Wiring Side

DESCRIPTION OF SCHEMATIC DIAGRAM

SAFETY NOTE:

1. DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACEING PARTS.
2. SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CHASSIS IS OPERATING.

IMPORTANT SAFETY NOTICE:

PARTS MARKED WITH "⚠" (▒▒▒▒▒) ARE IMPORTANT FOR MAINTAINING THE SAFETY OF THE SET. BE SURE TO REPLACE THESE PARTS WITH SPECIFIED ONES FOR MAINTAINING THE SAFETY AND PERFOMANCE OF THE SET.

SERVICE PRECAUTION:

The area enclosed by this line (▬ ■ ▬) is direct/y connected with AC Mains Voltage.
When servicing the area, connect an isolating transformer between TV receiver and AC line to eliminate hazard of electric shock.

NOTE:

1. The unit of resistance "ohm" is omitted (K = 1000 ohms, M = Meg ohm).
2. All resistors are 1/8 watt, unless otherwise noted.
3. All capacitors are μF, unless otherwise noted P=μμF.
4. The diodes, whose parts code is not described, are the 1SS119.
5. All resistors are 1/8 W, unless otherwise noted.

VOLTAGE MEASUREMENT CONDITIONS:

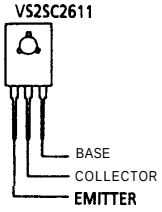
1. Voltages without parenthesis measured with 3000 μV B & W or Color Signal.
2. The voltage in parenthesis represents the value measured with no signal.
3. All the voltages were measured by using a high impedance voltmeter.

WAVEFORM MEASUREMENT CONDITIONS:

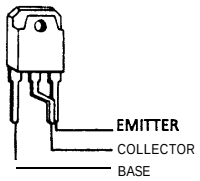
1. The colour bar signal applied to the TP40 1 is 1.8Vp-p.
2. The tuner AGC voltage is approximately 4V.

SOLID STATE DEVICE BASE DIAGRAMS

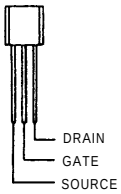
VS2SC2456
VS2SC2611



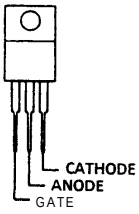
VS2SC1555



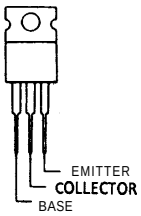
VS2SK304CD/-1



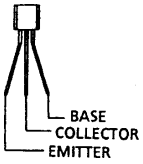
VHSSF5J42//-1



VS2SD880GLB-1

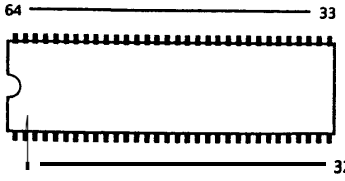


VS2SC1815GW-1
VS2SC1815YW-1
VS2SA1015Y/1E
VS2SA1015G/1E
VS2SC3399//-1
VS2SA950-Y/1E
VS2SC945AP/-1
VS2SC3279//1E
VS2SC3279N/-1
VS2SC383-WT-1
VS2SC3402//-1

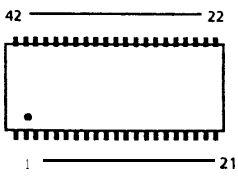


TOP VIEW

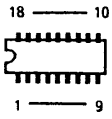
RH-IX0969CEN1



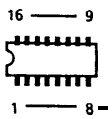
RH-IX1194CEN1



RH-IX0776CEZZ
RH-IX0711CEN1
VHIM51321P/-1

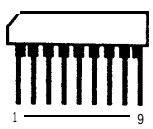


VHILH5047//-1

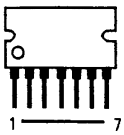


SIDE VIEW

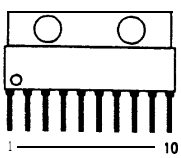
RH-IX0260CEZZ



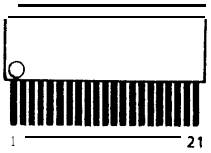
RH-IX0355CEZZ



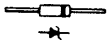
RH-IX0365CEZZ



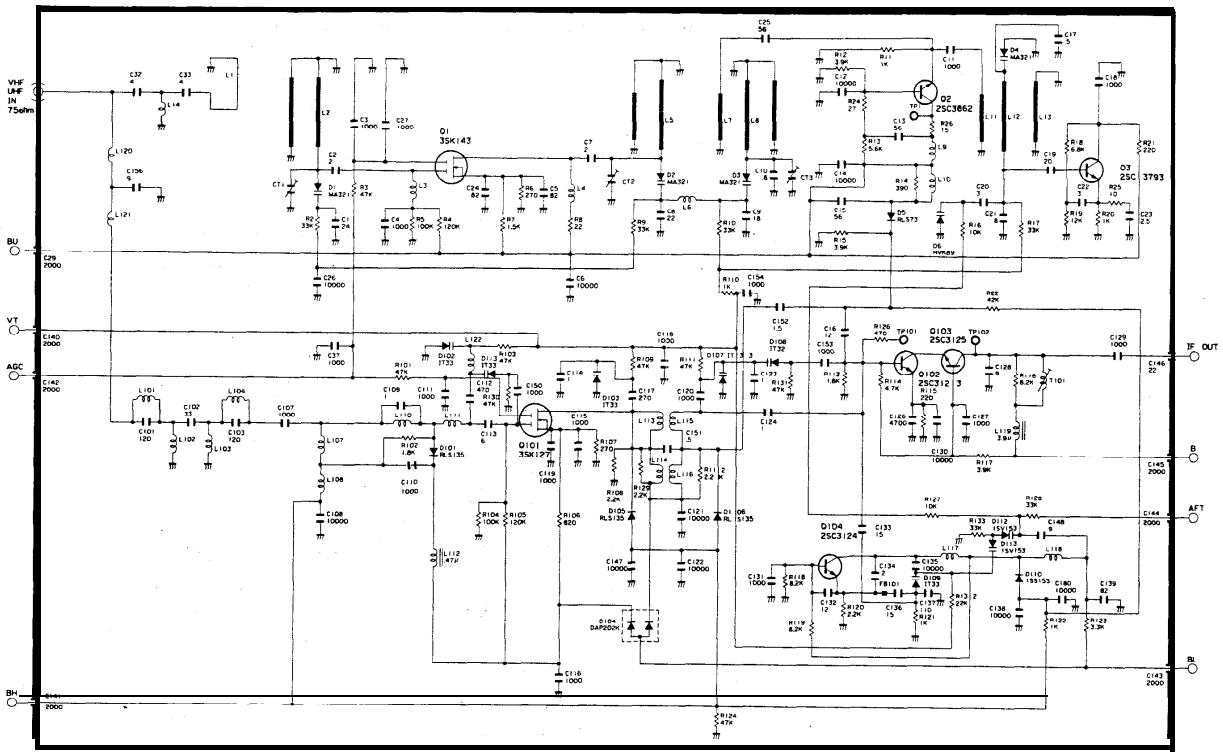
VHiTA8763Z



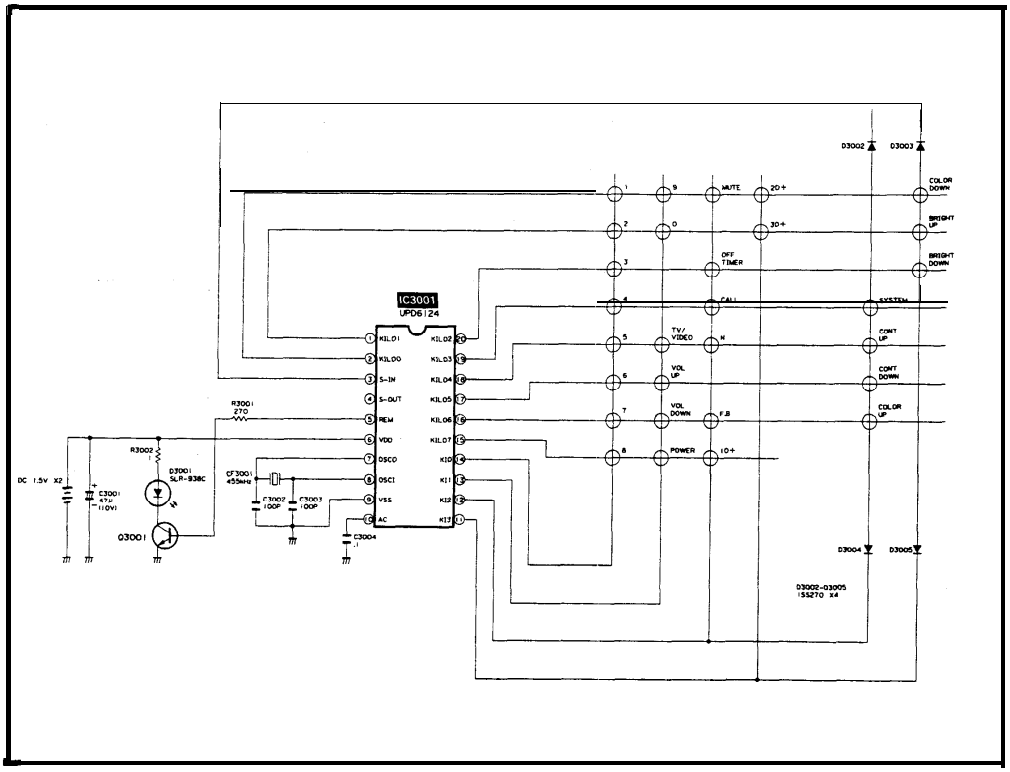
IX0249CE



TUNER CIRCUIT ⚠ VTU-VTSA7S1///

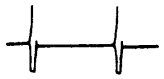
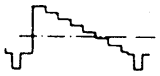
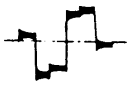
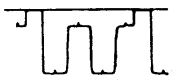
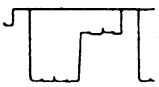
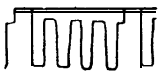
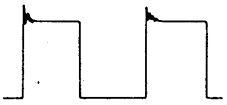


INFRARED REMOTE CONTROLLER CIRCUIT: **RRMCG0756CESA**

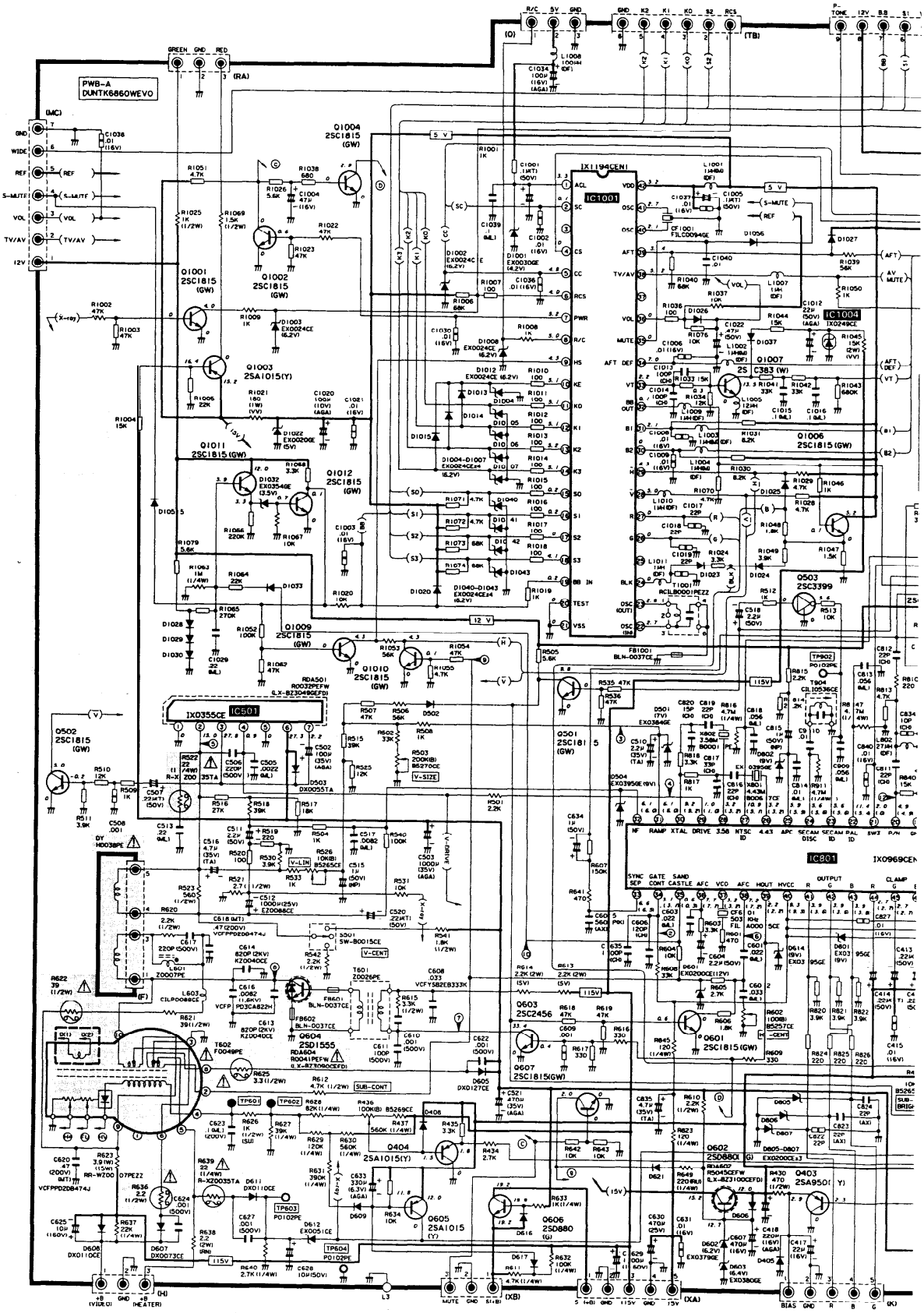


CAUTION: This circuit diagram is original one, therefore there may be a slight difference from yours.

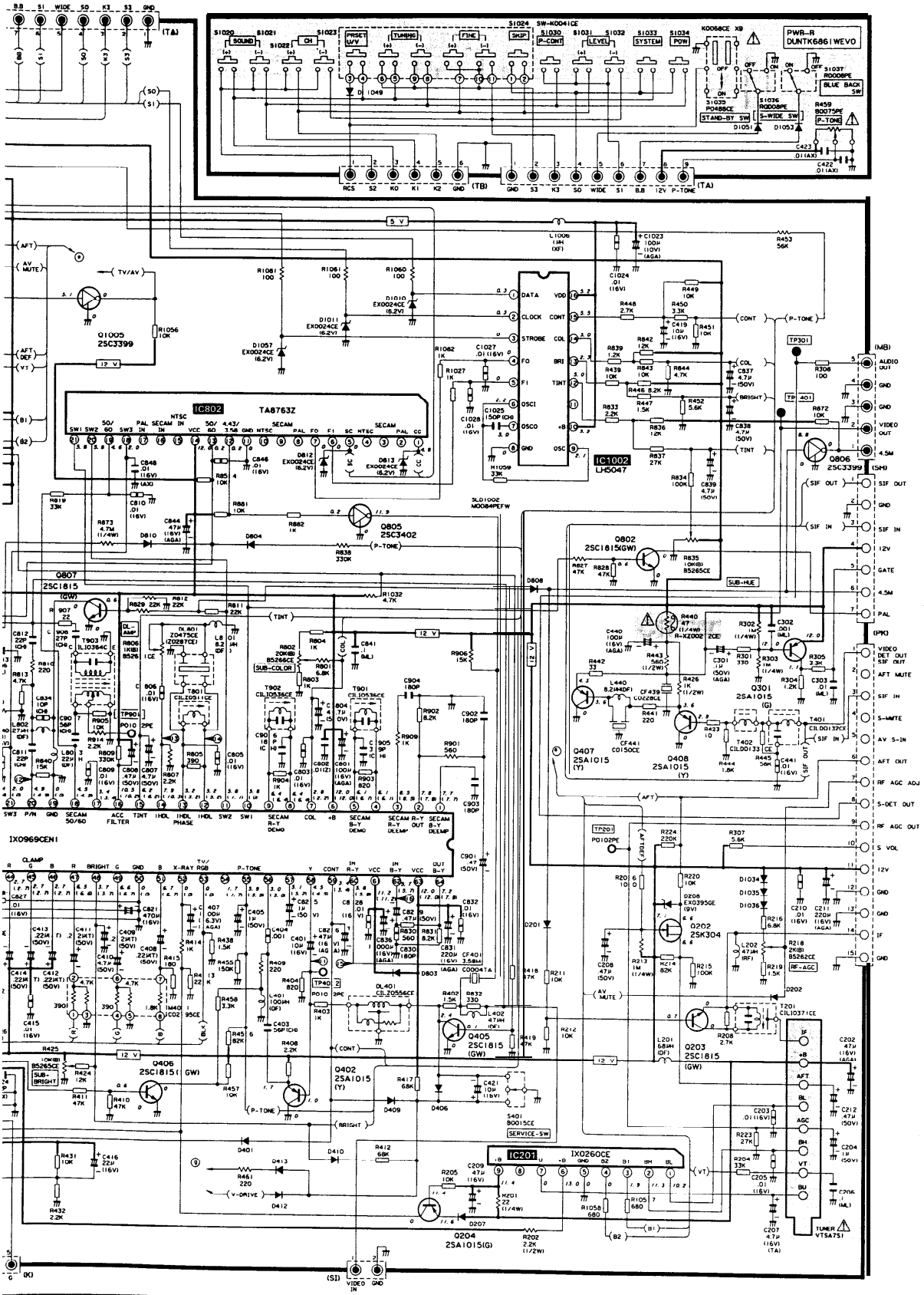
WAVE FORMS

				
① 1.8Vp-p (H)	② 8.8Vp-p (H)	③ 2.0Vp-p (V)	④ 1.2Vp-p (V)	⑤ 56Vp-p (V)
⑥ 1.2Vp-p (H)	⑦ 120Vp-p (H)	⑧ 1030Vp-p (H)	⑨ 12.8Vp-p (H)	⑩ 9.2Vp-p (H)
				
⑪ 0.44Vp-p (H)	⑫ 0.3Vp-p (H)	⑬ 2.6Vp-p (H)	⑭ 0.32Vp-p (H)	⑮ 0.88Vp-p (H)
				
⑯ 0.68Vp-p (H)	⑰ 80Vp-p (H)	⑱ 86Vp-p (H)	⑲ 84Vp-p (H)	⑳ 680Vp-p (AC 220V)

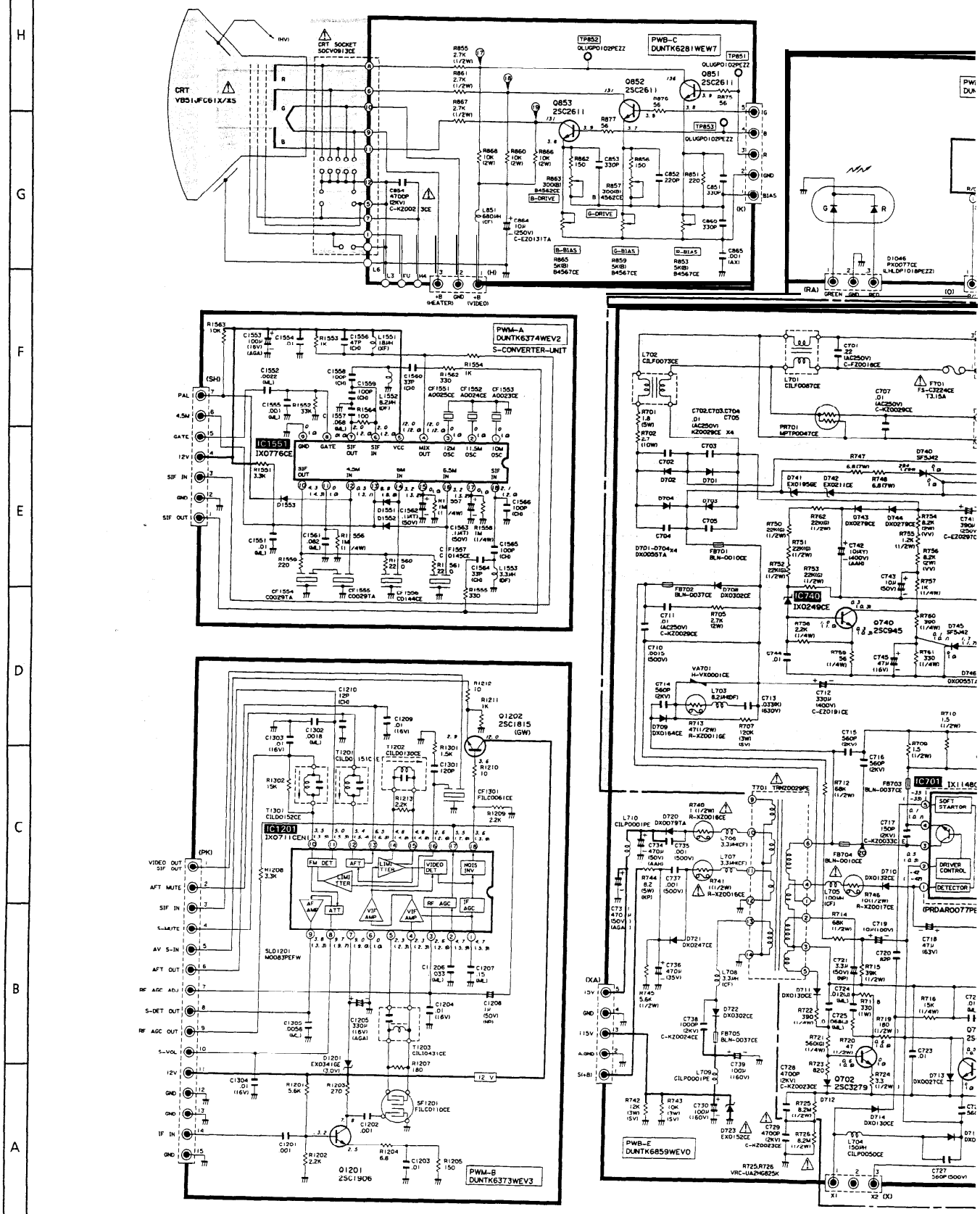
SCHEMATIC DIAGRAM: SUB CIRCUIT



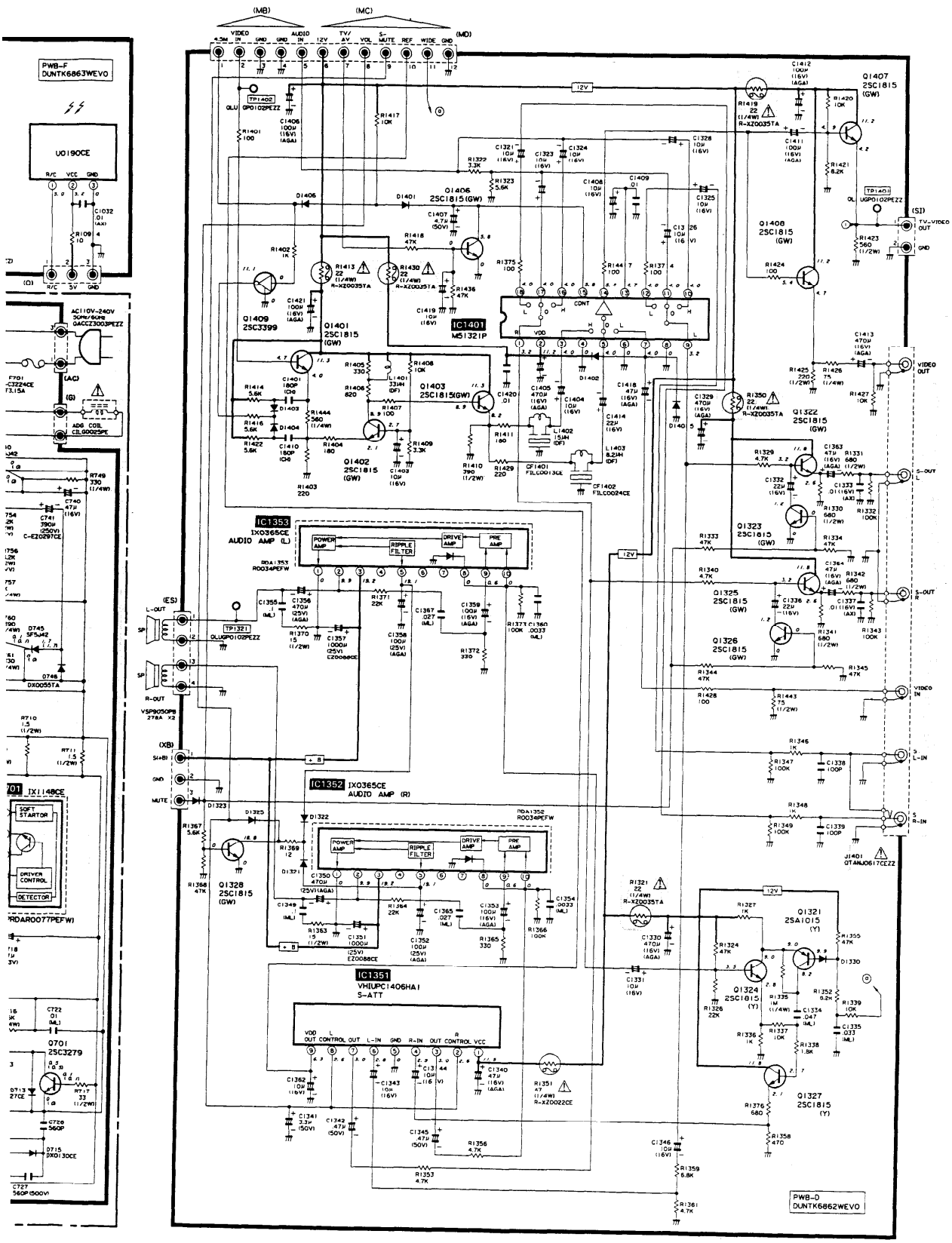
CAUTION: This circuit diagram is original one, therefore there may be a slight difference from yours.



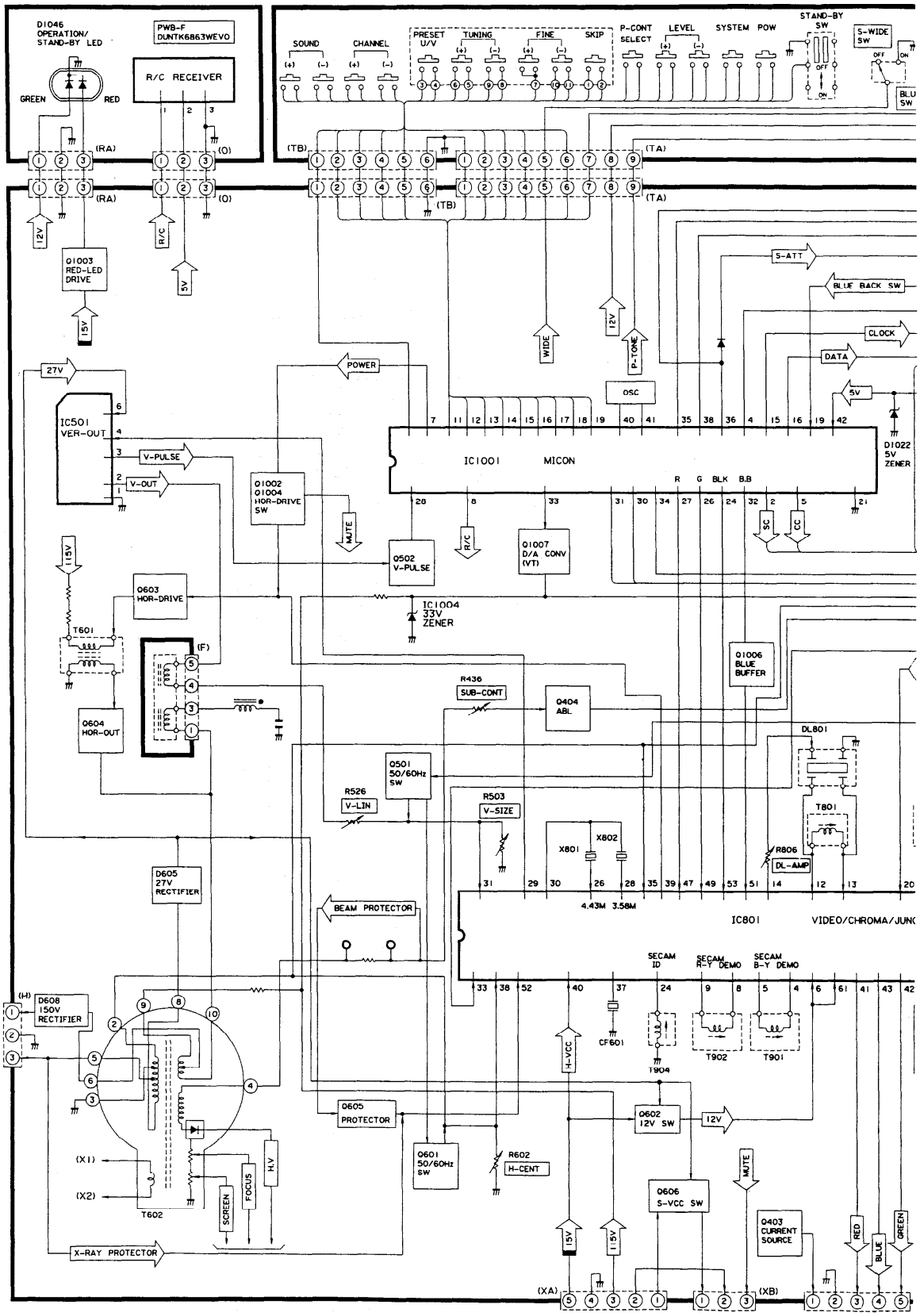
SCHEMATIC DIAGRAM: MAIN CIRCUIT

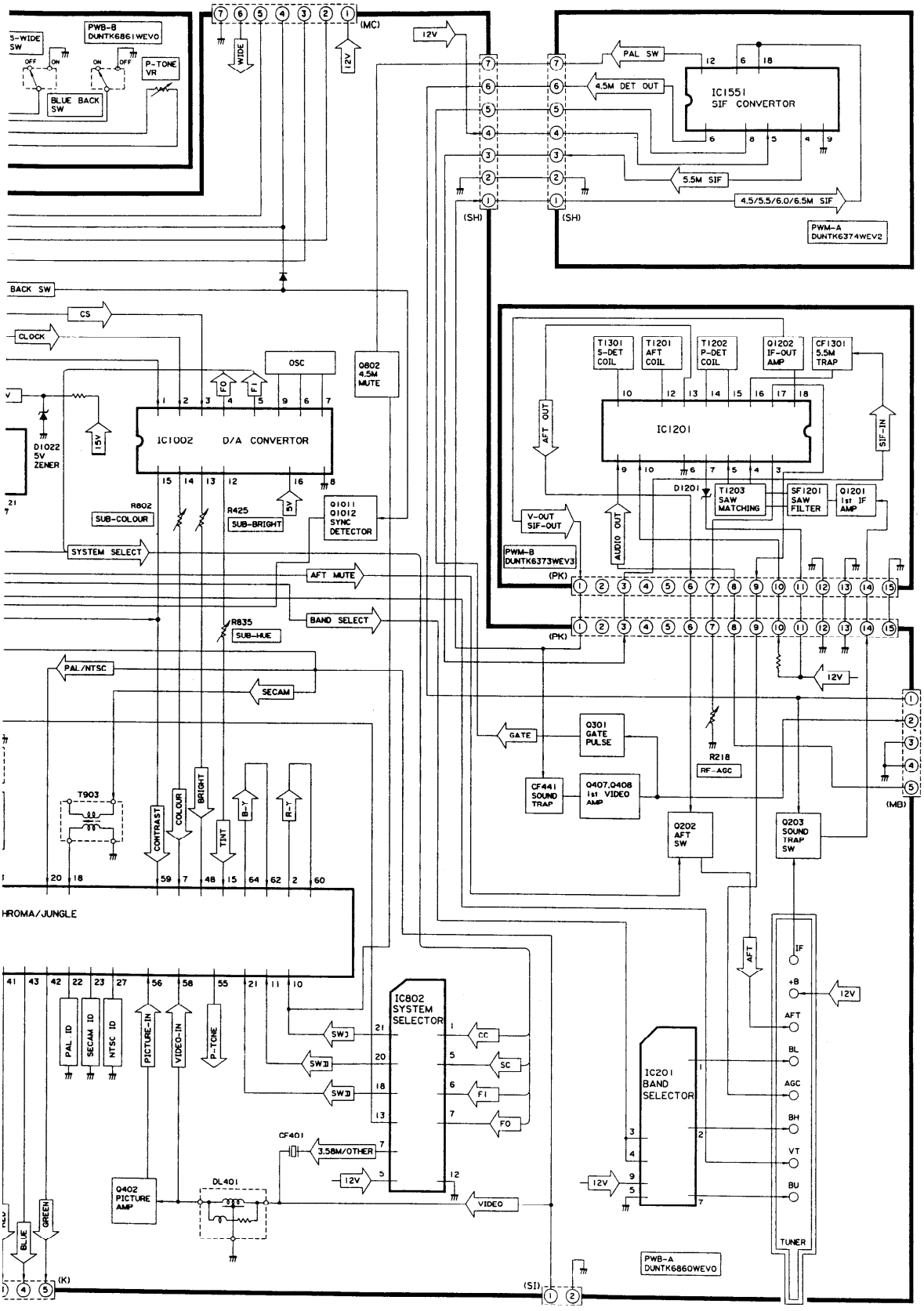


CAUTION: **This circuit diagram is original one, therefore there may be a slight difference from** yours.



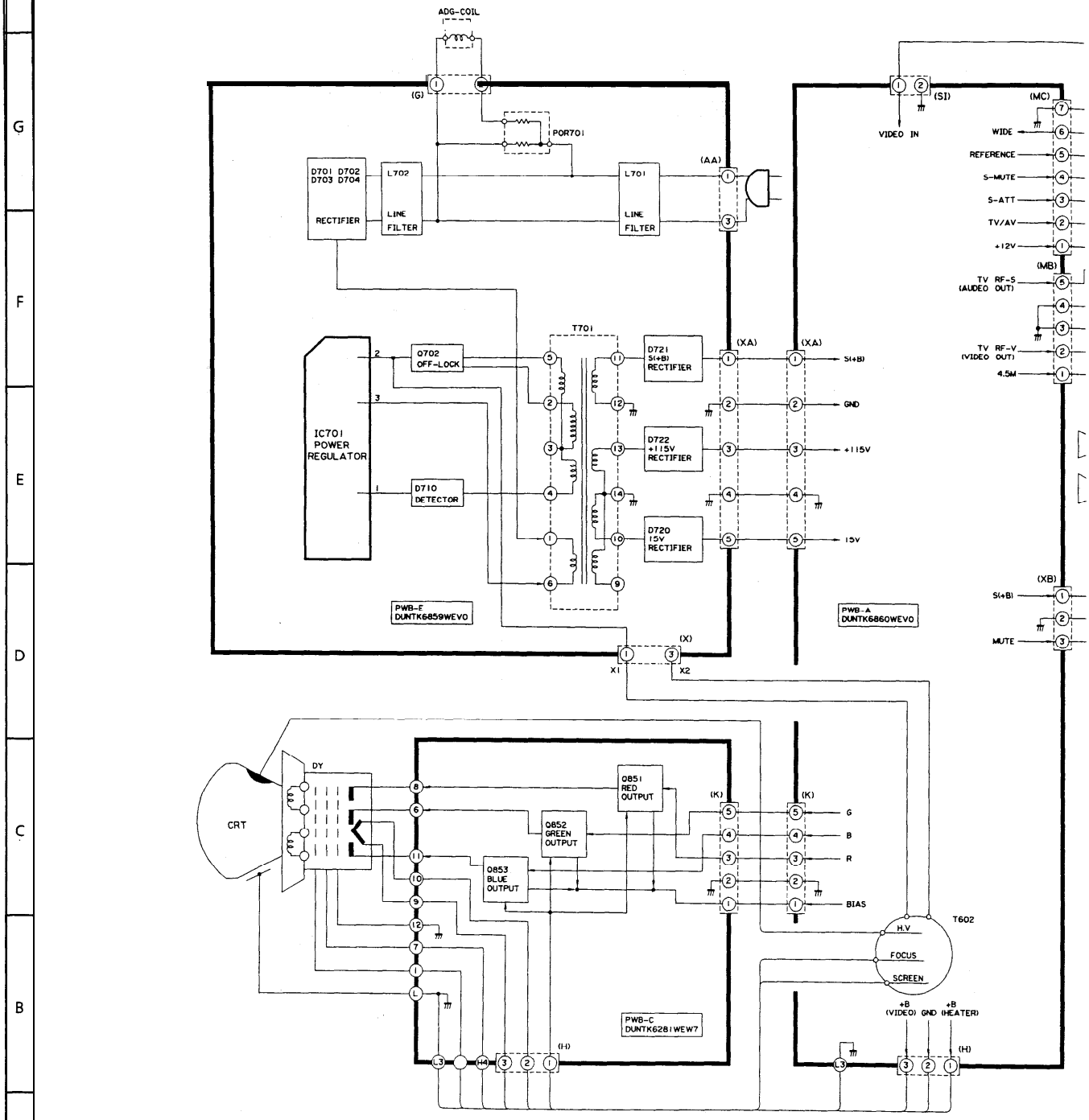
BLOCK DIAGRAM: MAIN CIRCUIT

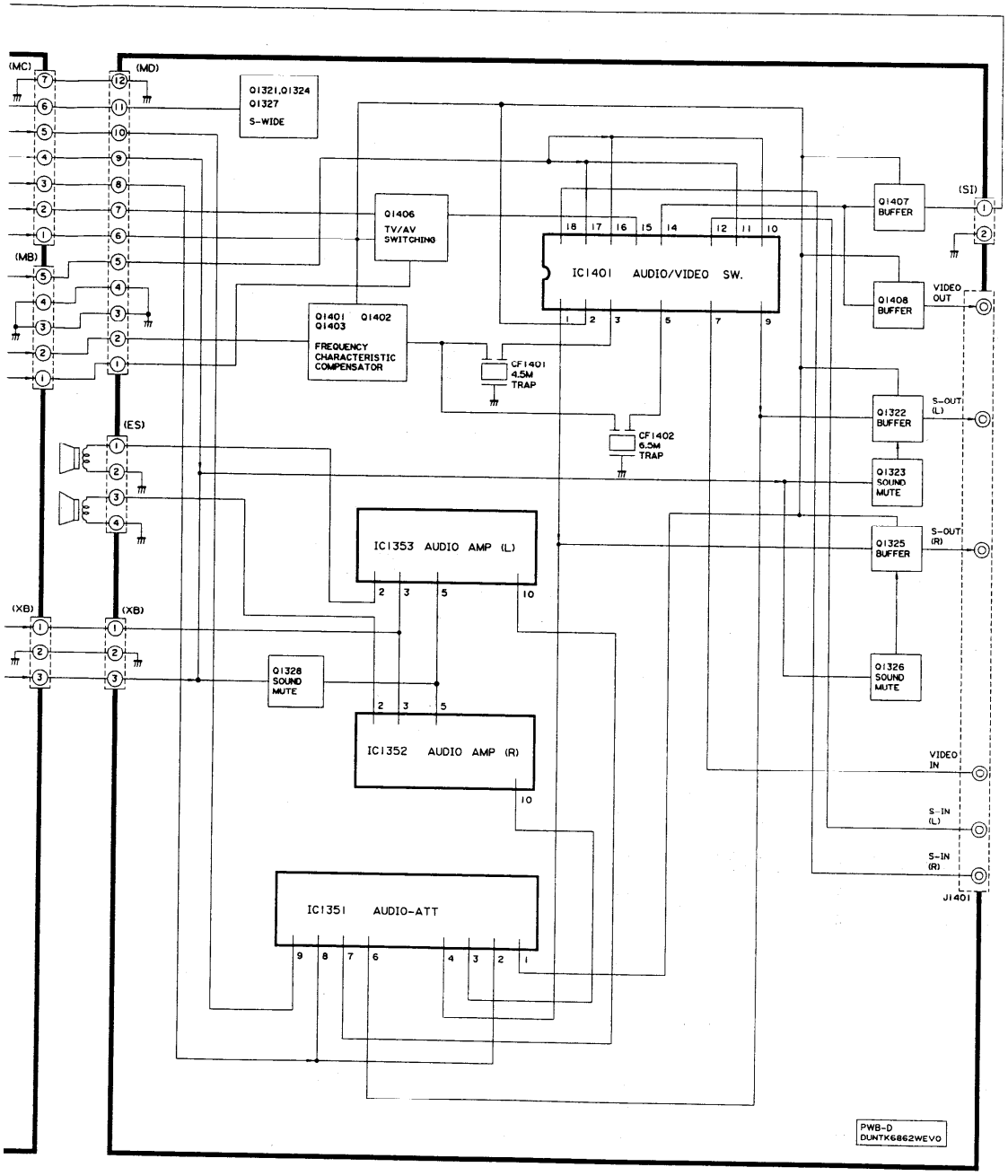



PWB-B
DUNTK6861WEV0
S-WIDE SW
P-TONE VR
BLUE BACK SW
WIDE
12V
(MC)
PAL SW
4.5M DET OUT
IC1551
SIF CONVERTOR
5.5M SIF
4.5/5.5/6.0/6.5M SIF
PWM-A
DUNTK6374WEV2
(SH)
BACK SW
CS
CLOCK
OSC
Q802
4.5M
MUTE
IC1002 D/A CONVERTOR
D1022
5V
ZENER
15V
5V
R802
SUB-COLOUR
R425
SUB-BRIGHT
Q1011
Q1012
SYNC
DETECTOR
SYSTEM SELECT
AFT MUTE
BAND SELECT
R835
SUB-HUE
PAL/NTSC
SECAM
T1301
S-DET
COIL
T1201
AFT
COIL
T1202
P-DET
COIL
Q1202
IF-OUT
AMP
CF1301
5.5M
TRAP
IC1201
AFT OUT
SIF-IN
D1201
T1203
SAW
MATCHING
SF1201
SAW
FILTER
Q1201
1st IF
AMP
V-OUT
SIF-OUT
AUDIO OUT
PWM-B
DUNTK6373WEV3
(PK)
GATE
Q301
GATE
PULSE
R218
RF-AGC
CF441
SOUND
TRAP
Q407,Q408
1st VIDEO
AMP
Q202
AFT
SW
Q203
SOUND
TRAP
SW
(MB)
T903
CONTRAST
COLOUR
BRIGHT
TINT
B-Y
R-Y
CHROMA/JUNGLE
IC802
SYSTEM
SELECTOR
PAL ID
SECAM ID
NTSC ID
PICTURE-IN
VIDEO-IN
P-TONE
SWI
SWII
SWIII
CC
SC
FI
FO
CF401
3.58M/OTHER
DL401
Q402
PICTURE
AMP
VIDEO
IC201
BAND
SELECTOR
AFT
IF
+B
AGC
BH
VT
BU
TUNER
BLUE
GREEN
(K)
(SI)
PWB-A
DUNTK6860WEV0

7 8 9 10 11 12

BLOCK DIAGRAM: SUB CIRCUIT




(MC)
(MD)
Q1321,Q1324
Q1327
S-WIDE
Q1406
TV/AV
SWITCHING
IC1401 AUDIO/VIDEO SW.
Q1407
BUFFER
(SI)
Q1408
BUFFER
VIDEO
OUT
(MB)
Q1401 Q1402
Q1403
FREQUENCY
CHARACTERISTIC
COMPENSATOR
CF1401
4.5M
TRAP
CF1402
6.5M
TRAP
Q1322
BUFFER
S-OUT
(L)
(ES)
Q1323
SOUND
MUTE
IC1353 AUDIO AMP (L)
Q1325
BUFFER
S-OUT
(R)
(XB)
(XB)
Q1328
SOUND
MUTE
Q1326
SOUND
MUTE
IC1352 AUDIO AMP (R)
VIDEO
IN
S-IN
(L)
S-IN
(R)
J1401
IC1351 AUDIO-ATT
PWB-D
DUNTK6862WEVO

	7	8	9	10	11	12

PARTS LIST

PARTS REPLACEMENT

Replacement parts which have these special safety characteristics identified in this manual: electrical components having such features are identified by ⚠ in the Replacement Parts Lists.
The use of **a** substitute replacement part which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

MARK ★: SPARE PARTS-DELIVERY SECTION

Ref. No.	Part No.	★	Description	Code

PICTURE TUBE

⚠	VB51JFC61X/*S	R	CRT	CF
⚠DY	RCiLH003-8PEZZ	R	Deflection Yoke	BL
⚠L1	RCiLG0025PEZZ	R	Degaussing Coil	AW
	PMAGF3003CEZZ	J	Magnet Ass'y, Purity and Static Convergence	AK
	PSPAG0028CEZZ	J	Wedge (Rubber), Yoke Positioning (3 pcs used)	AB

PRINTED WIRING BOARD ASSEMBLIES

(NOT REPLACEMENT ITEM)

PWB-A DUNTK6860WEV0 – Mother Unit	—
PWB-B DUNTK6861 WEV0 – Control Unit	—
PWB-C DUNTK6281WEW7 – CRT Socket Unit	—
PWB-D DUNTK6862WEV0 – AV/S-Output Unit	—
PWB-E DUNTK6859WEV0 – Powe Unit	—
PWB-F DUNTK6863WEV0 – R/C Receiver & LED Unit	—
PWM-A DUNTK6374WEV2 – S-Converter Unit	—
PWM-B DUNTK6373WEV3 – IF Unit	—

Ref. No.	Part No.	★	Description	Code

PWB-A DUNTK6860WEV0

MOTHER UNIT

TUNER

NOTE: THE PARTS HERE SHOWN ARE SUPPLIED AS AN ASSEMBLY BUT NOT INDEPENDENTLY.

⚠	VTUVTSA7S 1 ///	J	Tuner, UHF/VHF	BE

INTEGRATED CIRCUITS

IC201	RH-iX0260CEZZ	J	Band Switching	AF
IC501	RH-iX0355CEZZ	J	Vertical Output	AS
IC801	RH-iX0969CEN1	J	Video Chroma, Sync. Separator, Vertical / Horizontal Osc. and Driver	BG
IC802	VHiTA8763Z/-1	J	System Switching	AM
IC1001	RH-iX1194CEN1	J	Microprocessor	AW
IC1002	VHiLH5047//-1	J	DAC.	AM
IC1004	RH-iX0249CEZZ	J	Zener IC	AE

TRANSISTORS

Q202	VS2SK304CD/-1	J	2SK304	AC
Q203, 405, 406, 501, 502, 601, 607, 802, 807, 1001, 1002, 1004, 1006, 1009, 1010, 1011, 1012	VS2SC1815GW-1	J	2SC1815(GW)	AB
Q204, 301	VS2SA101 5G/1E	J	2SA1015(G)	AC
Q402, 404, 407, 408, 605, 1003	VS2SA101 5Y/1E	J	2SA1015(Y)	AC
4403	VS2SA950-Y/1E	J	2SA950(Y)	AD
Q503, 806, 1005	VS2SC3399//-1	J	2SC3399	AB

PWB-A DUNTK6860WEV0

MOTHER UNIT (Continued)

TRANSISTORS (Continued)

Ref. No.	Part No.	★	Description	Code
Q602, 606	VS2SD880GLB-1	J	2SD880(G)	AF
Q603	VS2SC2456//1E	J	2SC2456	AE
⚠Q604	VS2SD1555//1E	J	2SD1555	AP
Q805	VS2SC3402//-1	J	2SC3402	AB
Q1007	VS2SC383-WT-1	J	2SC383(W)	AF

DIODES

Ref. No.	Part No.	★	Description	Code
D201, 202, 207, 401, 405, 406, 408, 409, 410, 412, 413, 502, 606, 609, 616, 617, 621, 803, 804, 808, 810, 1013, 1014, 1015, 1020, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1033, 1034, 1035, 1036, 1037, 1054, 1055, 1056	VHD1SS119	J	1SS119	AA

DIODES (Continued)

Ref. No.	Part No.	★	Description	Code
D208, 504, 614, 801, 802	RH-EX0395GEZZ	J	Zener Diode, HZS9A	A
D501	RH-EX0384GEZZ	J	Zener Diode, HZS7A	A
D503	RH-DX0055TAZZ	J	1S1888	AD
D601, 805, 806, 807	RH-EX0200CEZZ	J	Zener Diode, RD12E	AB
D602	RH-EX0379GEZZ	J	Zener Diode, HZS6	AA
D603	RH-EX0380GEZZ	J	Zener Diode, HZS7	AA
D605	RH-DX0127CEZZ	J	S5295G	AC
D607	RH-DX0073CEZZ	J	RH17	AD
D608, 611	RH-DX011 0CEZZ	J	S5277G	AB
D612	RH-EX005 1 CEZZ	J	Zener Diode, RD22E	AB
D812, 813, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1010, 1011, 1012, 1040, 1041, 1042, 1043, 1057	RH-EX0024CEZZ	J	Zener Diode, RD6.2E	AB
D1001	RH-EX0030GEZZ	J	Zener Diode, RD4.3E	AB
D1022	RH-EX0020GEZZ	J	Zener Diode, RD5.1E	AE
D1032	RH-EX0354GEZZ	J	Zener Diode, HZS4A	A

PACKAGED CIRCUITS

Ref. No.	Part No.	★	Description	Code
X801	RCRSB0067CEZZ	J	Crystal, 4.43MHz	AQ
X802	RCRSB0001 PEZZ	R	Crystal, 3.58MHz	AL
M401	RMPTC0295CEZZ	J	Resistor Array	AE

COILS

Ref. No.	Part No.	★	Description	Code
L201	VP-DF680K0000	J	68µH	AB
L202	VP-RF470K0000	J	47µH	AB
L401	VP-δF101 K0000	J	100µH	AC
L402	VP-DF470K0000	J	47µH	A%
L440, 801	VP-DF8R2K0000	J	8.2µH	AB

PWB-A DUNTK6860WEV0

MOTHER UNIT (Continued)

Ref. No.	Part No.	★	Description	Code
COILS (Continued)				
L601	RCiLZ0007PEZZ	R	Linearity Coil	AK
L603	RCiLP0088CEZZ	J		AG
L802	VP-DF270K0000	J	27µH	AB
L803	VP-DF220K0000	J	22µH	AB
L1001, 1002, 1003, 1004, 1007, 1009, 1010, 1011	VP-DF1 R0M0000	J	1µH	AB
L1005	VP-DF120K0000	J	12µH	AB
L1006	VP-XF1 R0K0000	J	1µH	AB
L1008	VP-DF101 K0000	J	100µH	AB
CERAMIC FILTERS				
CF401	RFiLC0004TAZZ	J	3.58MHz Trap	AE
CF439	RFiLC0228CEZZ	J	5.74MHz Trap	AF
CF441	RFiLC01 50CEZZ	J	5.6/6.0MHz Trap	AE
CF601	RFiLA0005CEZZ	J	Osc., 503kHz	AE
CF1001	RFiLC0094GEZZ	J	Osc., 4MHz	AC
DELAY LINES				
DL401	RCiLZ0556CEZZ	J	DelayLine	AC
DL801	RCiLZ0475CEZZ	J	Delay Line (Chroma)	AP
TRANSFORMERS				
T201	RCiLi0371CEZZ	J	4.5MHz Trap	AD
T401	RCiLD01 32CEZZ	J	Carrier Filter	AD
T402	RCiLD01 33CEZZ	J	Carrier Filter	AD
T601	RTRNZ0026PEZZ	R	H-Drive Trans.	AH
⚠T602	RTRNF0049PEZZ	R	Flyback Trans.	BN
T801	RCiLZ05 11CEZZ	J	Delay Phase	AD
T901, 902, 904	RCiLi0536CEZZ	J	B-Y Demodulator	AD
T903	RCiLi0364CEZZ	J	Bell Filter	AD
T1001	RCiLB0001 PEZZ	R	CH-Sign Osc Coil	AG

Ref. No.	Part No.	★	Description	Code
CONTROLS				
R218	RVR-B5262CEZZ	J	2k(B) RF-AGC	AB
R425, 526, 835	RVR-B5265CEZZ	J	10k(B) Sub-Brightness, Vertical Linearity, Sub-Hue	AB
R436	RVR-B5269CEZZ	J	lOOk(B)SContrast	AB
R503	RVR-B5270CEZZ	J	200k(B) Vertical Size	AB
R602	RVR-B5257CEZZ	J	100(B) Horiz. Center	AB
R802	RVR-B5266CEZZ	J	20k(B) Sub-Colour	AB
R806	RVR-B5261 CEZZ	J	1k(B) DL-Amp.	AB
CAPACITORS				
C207	VCSATA1CE475K	J	4.7 16V Tantalum	AC
C211, 418, 831	VCEAGA1 CW227M	J	220 16V Electrolytic	AC
C407	VCEAGA0JW107M	J	100 6.3V Electrolytic	AB
C440, 801, 1034	VCEAGA1 CW107M	J	100 16V Electrolytic	AB
C502	VCEAGA1 VW1 07M	J	100 35V Electrolytic	AC
C503	VCEAGA1VW108M	J	1000 35V Electrolytic	AD
C512	RC-EZ0088CEZZ	J	1000 25V Electrolytic	AE
C515, 815	VCE9AA1HW105M	J	1 50V Electrolytic (N.P)	AB
C516, 835	VCSATA1VE475K	J	4.7 35V Tantalum	AD
C521	VCEAGA1VW477M	J	470 35V Electrolytic	AD
C607, 821	VCEAAA1CW477M	J	470 16V Electrolytic	AC
C608	VCFYSB2EB333K	J	0.033 250V Mylar	AC
C610, 622, 624, 627	VCKYPA2HB102K	J	0.001 500V Ceramic A	A
C611	VCKYPA2HB101K	J	100p 500V Ceramic A	A
C613, 614	RC-KZ0040CEZZ	J	820p 2kV Ceramic	AD
C616	VCFPPD3CA822H		0.0082 1.6kV Metalized Polyester	AE
C618, 620	VCFPPD2DB474J		0.47 200V Metalized Polyester	AE
C623	VCQYSH2DM104K		0.1 200V Mylar	AD
C625	VCEAAA2CW106M		10 160V Electrolytic	AC
C629	VCEAAH2CW107M		100 160V Electrolytic	AE
C630	VCEAAA1EW477M		470 25V Electrolytic	AD
C633	VCEAGA0JW337M		330 6.3V Electrolytic	AB
C836	VCEAGA1CW108M		1000 16V Electrolytic	AD
Cl 020, 1023	VCEAGA1AW107M		100 10V Electrolytic	AB

Ref. No.	Part No.	★	Description	Code

PWB-A DUNTK6860WEV0
MOTHER UNIT (Continued)

RESISTORS

⚠R440	RR-XZ0022CEZZ	J	47 1/4W Fuse Resistor	AB
⚠R522,	RR-XZ0035TAZZ	J	22 1/4W Fuse Resistor	AB
⚠ 639				
R613,	VRS-SV3DB222J	J	2.2k 2W Metal Oxide	AB
614				
⚠R622	VRG-RL2HB390J	J	39 1/2W Fuse Resistor	AB
R623	RR-WZ0007PEZZ	R	3.9 15W Cement	AG
⚠R625	VRG-RL2HB2R2J	J	2.2 1/2W Fuse Resistor	AB
R626	VRS-SU2HB102J	J	1 k 1/2W Metal Oxide	AA
⚠R636	VRG-RL2HB3R3J	J	3.3 1/2W Fuse Resistor	AB
R638	VRN-RV3DB2R2J	J	2.2 2W Metal Oxide	AB
R1021	VRS-VV3AB181J	J	180 1W Metal Oxide	A A
R1045	VRS-VV3DB153J	J	15k 2W Metal Oxide	AA

SWITCHES

S401,	QSW-B0015CEZZ	J	Service,	AC
501			Vertical Center	

MISCELLANEOUS PARTS

FB601,	RBLN-0037CEZZ	J	Ferrite Bead	AB
602,				
1001				

PWB-B DUNTK6861 WEV0
CONTROL UNIT

DIODES

D1049,	VHD1SS1 19//1E	J	1SS119	AA
1051,				
1053				

CONTROL

⚠R459	RVR-B0075PEZZ	R	10k(B) Picture Tone	AF

SWITCHES

⚠S1020,	QSW-K0068CEZZ	J	Sound Up,	AB
⚠ 1021,			Sound Down,	
⚠ 1022,			Channel Up,	
⚠ 1023,			Channel Down,	
⚠ 1030,			P-Control,	
⚠ 1031,			P-Control Level Up,	
⚠ 1032,			P-Control Level Down,	
⚠ 1033,			System,	
⚠ 1034			Power	
⚠S1024	QSW-K0041 CEZZ	J	Pre-Set	AK
⚠S1035	QSW-P0488CEZZ	J	Stand-by	AE
⚠S1036	QSW-R0008PEZZ	R	S-Wide,	AG
⚠ 1037			Bule Back	

PWB-C DUNTK6281 WEW7
CRT SOCKET UNIT

TRANSISTORS

Q851,	VS2SC2611//-1	J	2SC2611	AE
852,				
853				

COIL

L851	VP-CF681 K0000	J	680µH	AB

CONTROLS

R853,	RVR-B4567CEZZ	J	5k (B) Red Bias,	AC
859,			Green Bias,	
865			Blue Bias	
R857,	RVR-B4562CEZZ	J	300 (B) Green Drive,	A C
863			Blue Drive	

Ref. No.	Part No.	★	Description	Code

PWB-C DUNTK6281 WEW7
CRT SOCKET UNIT (Continued)

CAPACITORS

⚠C854	RC-KZ0023CEZZ	J	4700p 2kV Ceramic	A D
C864	RC-EZ0131TAZZ	J	10 250V Electrolytic	A D

RESISTORS

R855, 861, 867	VRC-MA2HG272J	J	2.7k 1/2W Sold	AA
R860, 866, 868	VRS-VV3DB103J	J	10k 2W Metal Oxide	A A

MISCELLANEOUS PART

⚠	QSδCV09 13CEZZ	J	CRT Socket	AK

PWB-D DUNTK6862WEV0
AV/S-OUTPUT UNIT

INTEGRATED CIRCUITS

IC1351	VHiUPC1406HA1	J	Sound Att.	AH
IC1352, 1353	RH-iX0365CEZZ	J	Sound Output(Sound Output(L)	A K
IC1401	VHiM51321P/-I	J	AV Switching	AL

TRANSISTORS

Q1321	VS2SA1015Y/1E	J	2SA1015(Y)	AC
Q1322, 1323, 1325, 1326, 1328, 1401, 1402, 1403, 1406, 1407, 1408	VS2SC1815GW-1	J	2SC1815	AB
Q1324, 1327	VS2SC1815YW-1	J	2SC1815(Y)	AC
Q1409	VS2SC3399//-1	J	2SC3399	AB

DIODES

D1321, 1322, 1323, 1325, 1330, 1401, 1402, 1403, 1404, 1405, 1406	VHD1SS119//1E	J	1SS119	AA

COILS

L1401	VP-DF330K0000	J	33µH	AB
L1402	VP-DF150K0000	J	15µH	AB
L1403	VP-DF8R2K0000	J	8.2µH	AB

CERAMIC FILTERS

CF1401	RFiLC001 3CEZZ	J	4.5MHz Trap	AE
CF1402	RFiLC0024CEZZ	J	6.5MHz Trap	AE

CAPACITORS ,

C1329, 1330, 1405, 1413	VCEAGA1CW477M	J	470 16V Electrolytic	AC
C1350, 1356	VCEAGA1EW477M	J	470 25V Electrolytic	AD
C1351, 1357	RC-EZ0088CEZZ	J	1000 25V Electrolytic	AE
C1352, 1358	VCEAGA1EW107M	J	100 25V Electrolytic	AD
C1353, 1359, 1406, 1411, 1412, 1421	VCEAGA1CW107M	J	100 16V Electrolytic	AB

RESISTORS

⚠ R1321, ⚠ 1350, ⚠ 1413, ⚠ 1419	RR-XZ0035TAZZ	J	22 1/4W Fuse Resistor	AB
⚠R1351	RR-XZ0022CEZZ	J	47 1/4W Fuse Resistor	AB

MISCELLANEOUS PART

⚠ J1401	QTANJ0617CEZZ	J	AV Input Termianl	A H

PWB-E DUNTK6859WEV0

POWER UNIT

Ref. No.	Part No.	★	Description	Code
INTEGRATED CIRCUITS				
⚠IC701	RH-iX1 148CEZZ	J	Power Regulator	Ax
⚠IC740	RH-iX0249CEZZ	J	Zener IC	AE
TRANSISTORS				
⚠Q701	VS2SC3279//1E	J	2SC3279	AA
⚠Q702	VS2SC3279N/-1	J	2SC3279	AC
⚠Q740	VS2SC945AP/-1	J	2SC945	AB
DIODES				
⚠D701, ⚠ 702, ⚠ 703, ⚠ 704, ⚠ 746	RH-DX0055TAZZ	J	1S1888	AD
⚠D708, 722	RH-DX0302CEZZ	J	EU2A	AC
⚠D709	RH-DX0164CEZZ	J	ES1F	AC
⚠D710	RH-DX0132CEZZ	J	EU1A	AC
⚠D711, ⚠ 714, ⚠ 715	RH-DX0130CEZZ	J	EU-1Z	AE
⚠D712	VHD1SS119//1E	J	1SS119	AA
⚠D713	RH-DX0027CEZZ	J	SV03YSV	AE
D720	RH-DX0079TAZZ	J	RU2	AE
D721	RH-DX0247CEZZ	J	RU3AMV1	AE
⚠D723	RH-EX0152CEZZ	J	Zener Diode, R1MV	AE
⚠D740, ⚠ 745	VHSSF5J42//-1	J	Thyristor	AK
⚠D741	RH-EX0195GEZZ	J	Zener Diode, HZS30E	AA
⚠D742	RH-EX02 1 1 CEZZ	J	Zener Diode	AK
⚠D743, ⚠ 744	RH-DX0279CEZZ	J	1N4005	AB
⚠VA701	RH-VX0001CEZZ	J	Varistor	AF
PACKAGED CIRCUIT				
⚠PR701	RMPTP0047CEZZ	J	Positive Coefficient	AK
COILS				
⚠L701	RCiLF0087CEZZ	J	Line Filter	AL
⚠L702	RCiLF0073CEZZ	J	Line Filter	AG
⚠L703	VP-DF8R2K0000	J	8.2µH	AB
⚠L704	RCiLP0050CEZZ	J		AE
⚠L705	VP-CF101 K0000	J	100µH	AB
L706, 707, 708	VP-CF3R3K0000	J	3.3µH	AB
L709, 710	RCiLP0001PEZZ	R		AF

Ref. No.	Part No.	★	Description	Code
TRANSFORMER				
⚠T701	RTRNZ0029PEZZ	R	Regulator Transformer	BB
CAPACITORS				
⚠C701	RC-FZ001 8CEZZ	J	0.22 AC250V Metallized Polyester	AH
⚠C702, ⚠ 703, ⚠ 704, ⚠ 705, ⚠ 707, ⚠ 711	RC-KZ0029CEZZ	J	0.01 AC250V Ceramic	AC
⚠C710	VCKYPA2HB152K	J	0.0015 500V Ceramic	AA
⚠C712	RC-EZ0191CEZZ	J	330 400V Electrolytic	AS
⚠C713	VCQPSC2JA333K	J	0.033 630V Mylar	AB
⚠C714, ⚠ 715, ⚠ 716	VCKYPH3DB561K	J	560p 2kV Ceramic	AC
⚠C717	RC-KZ0033CEZZ	J	150p 2kV Ceramic	AB
⚠C718	VCEAAA1JN476M	J	47 63V Electrolytic	AC
⚠C719	VCEAAA2AN106M	J	10 100V Electrolytic	AC
⚠C720	VCCSPA1HL820J	J	82p 50V Ceramic	AA
⚠C721	VCE9AA1HW335M	J	3.3 50V Electrolytic (N.P)	AE
⚠C722	VCQYVA1 HA103J	J	0.01 50V Mylar	AA
⚠C723, ⚠ 744	VCKZPA1HF103Z	J	0.01 50V Ceramic	AA
⚠C724	VCQYVA1 HA123J	J	0.012 50V Mylar	AA
⚠C725	VCQYVA1 HA682J	J	0.0068 50V Mylar	AA
⚠C726	VCKZPA1HB561K	J	560p 50V Ceramic	AA
⚠C727	VCKYPA2HB561K	J	560p 500V Ceramic	AA
⚠C728, ⚠ 729	RC-KZ0023CEZZ	J	4700p 2kV Ceramic	AD
C730, 739	VCEAAH2CW107M	J	100 160V Electrolytic	AE
C731	VCEAGA1HW477M	J	470 50V Electrolytic	AD
C734	VCEAAH1 HW477M	J	470 50V Electrolytic	AE
C735, 737	VCKYPA2HB102K	J	0.001 500V Ceramic	AA
C736	VCEAAA1VW477M	J	470 35V Electrolytic	AD
C738	RC-KZ0024CEZZ	J	1000p 2kV Ceramic	AC
⚠C740, ⚠ 745	VCEAAA1 CW476M	J	47 16V Electrolytic	AB
⚠C741	RC-EZ0297CEZZ	J	390 250V Electrolytic	AN
⚠C742	VCEAAH2GW106Y	J	10 400V Electrolytic	AE
⚠C743	VCEAAA1 HW106M	J	10 50V Electrolytic	AB

Ref. No.	Part No.	★	Description	Code

PWB-E DUNTK6859WEV0
POWER UNIT (Continued)

RESISTORS

⚠R701	VRW-KP3HC1R8K	J	1.8 5W Cement	AC
⚠R702	VRW-KP4AC2R7K	J	2.7 10W Cement	AF
⚠R705	VRS-VV3DB272J	J	2.7k 2W Metal Oxide	AA
⚠R707	VRS-SV3LB124J	J	120k3W Metal Oxide	AC
⚠R709, ⚠ 710, ⚠ 711	VRD-RM2HD1R5J	J	1.5 1/2W Carbon	AA
⚠R712, ⚠ 714	VRD-RM2HD683J	J	68k 1/2W Carbon	AA
⚠R713	RR-XZ0011GEZZ	J	47 1/2W Fuse Resistor	AB
⚠R715	VRD-RM2HD393J	J	39k 1/2W Carbon	AA
⚠R716	VRD-RA2EE153J	J	15k 1/4W Carbon	AA
⚠R717	VRD-RM2HD330J	J	33 1/2W Carbon	AA
⚠R718	VRS-VV3AB331J	J	330 1W Metal Oxide	AA
⚠R719	VRD-RM2HD181J	J	180 1/2W Carbon	AA
⚠R720	VRD-RM2HD470J	J	47 1/2W Carbon	AA
⚠R721	VRD-RA2EE561G	J	560 1/4W Carbon	AA
⚠R722, ⚠ 760	VRD-RA2EE391J	J	390 1/4W Carbon	AA
⚠R723	VRD-RA2BE821J	J	820 1/8W Carbon	AA
⚠R724	VRD-RM2HD3R3J	J	3.3 1/2W Carbon	AA
⚠R725, ⚠ 726	VRC-UA2HG825K	J	8.2M 1/2W Solid	AA
⚠R740, ⚠ 741	RR-XZ0016CEZZ	J	1 1/2W Fuse Resistor	AB
R742	VRS-SV3LB123J	J	12k 3W Metal Oxide	AB
R743	VRS-SV3LB103J	J	10k 3W Metal Oxide	AB
R744	VRW-KP3HC8R2K	J	8.2 5W Cement	AC
⚠R746	RR-XZ0017CEZZ	J	10 1/2W Fuse Resistor	AB
⚠R747, ⚠ 748	VRW-KP3NC6R8K	J	6.8 7W Cement	AC
⚠R749, ⚠ 761	VRD-RA2EE331J	J	330 1/4W Carbon	AA
⚠R750, ⚠ 751, ⚠ 752, ⚠ 753, ⚠ 762	VRD-RA2HD223G	J	22k 1/2W Carbon	AA
⚠R754, ⚠ 756	VRS-VV3DB822J	J	8.2k 2W Metal Oxide	AA
⚠R755	VRD-RM2HD122J	J	1.2k 1/2W Carbon	AA
⚠R757	VRD-RA2EE102J	J	1k 1/4W Carbon	AA
⚠R758	VRD-RA2EE222J	J	2.2k 1/4W Carbon	AA
⚠R759	VRD-RA2EE560J	J	56 1/4W Carbon	AA

Ref. No.	Part No.	★	Description	Code

MISCELLANEOUS PART

⚠F701	QFS-C3224CEZZ	J	Fuse, T3.15A	AD
	QFSHD1002CEZZ	J	Fuse Holder	AA
⚠FB701, ⚠ 704	RBLN-0010CEZZ	J	Ferrie Bead	AC
⚠FB702, 703, 705	RBLN-0037CEZZ	J	Ferrie Bead	AB

PWB-F DUNTK6863WEV0
R/C RECEIVER AND LED UNIT

DIODE

D1046	RH-PX0077CEZZ	J	LED (Red / Green)	AE

MISCELLANEOUS PART

	RRMCU0190CEZZ	J	Infrared R/C Receiver	AL

PWM-A DUNTK6374WEV2
S-CONVERTER UNIT

INTEGRATED CIRCUIT

IC1551	RH-iX0776CEZZ	J	S-Converter	AN

DIODES

D1551, 1552, 1553	VHD1SS119//1E	J	1SS119	AA

COILS

L1551	VP-XF180K0000	J	18µH	AB
L1552	VP-DF8R2K0000	J	8.2µH	AB
L1553	VP-DF3R3K0000	J	3.3µH	AB

CERAMIC FILTERS

CF1551	RFiLA0025CEZZ	J	12MHz Osc.	AF
CF1552	RFiLA0024CEZZ	J	11.5MHz Osc.	AF
CF1553	RFiLA0023CEZZ	J	10MHz Osc.	AF
CF1554, 1555	RFiLC0029TAZZ	J	4.5MHz Filter	AD
CF1556	RFiLC0144CEZZ	J	6MHz Filter	AD
CF1557	RFiLC0145CEZZ	J	6.5MHz Filter	AE

Ref. No.	Part No.	★	Description.	Code

PWM-B DUNTK6373WEV3
IF UNIT

INTEGRATED CIRCUIT

IC1201 RH-iX0711 CEN1J PIF/SIF AN

TRANSISTORS

Q1201 VS2SC1906//1E J 2SC1906 AC
Q1202 VS2SC1815GW-1 J 2SC1815(GW) AB

DIODE

D1201 RH-EX0341GEZZ J Zener Diode, HZS2 AA

TRANSFORMERS

T1201 RCiLD0151CEZZ J AFT AF
T1202 RCiLD0 130CEZZ J P-Detect Coil AD
T1203 RCiLi0431CEZZ J SAW Matching Coil A D
T1301 RCiLD01 52CEZZ J S-Detect Coil AE

CERAMIC FILTERS

CF1301 RFiLC0061CEZZ J 5.5MHz Filter AF
SF1201 RFiLC011 0CEZZ J 38.9MHz SAW Filter A K

CAPACITORS

C1205 VCEAGA1CW337M J 330 16V Electrolytic AC
C1208 VCE9AA1HW105M J 1 50V Electrolytic (N.P) AB

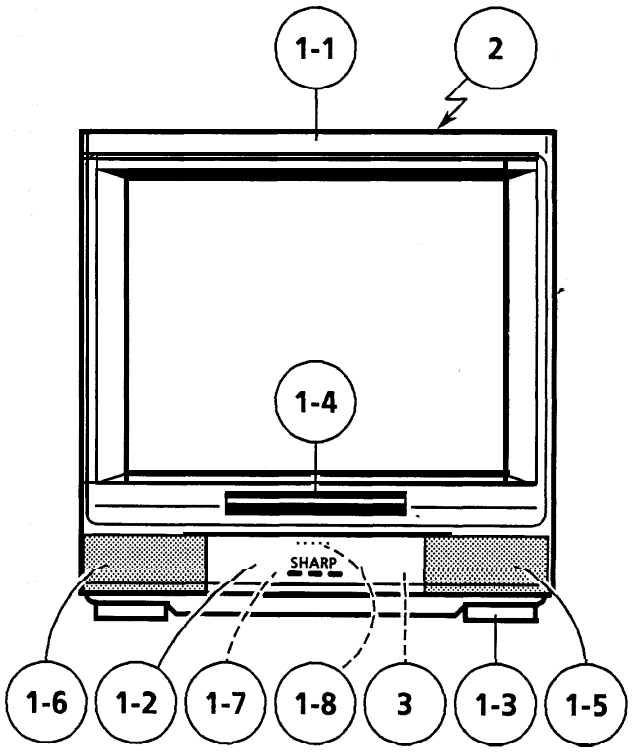
MISCELLANEOUS PARTS

⚠	QACCZ3003PEZZ	R	AC Cord	AQ
	VSP9050PB278A	R	Speaker (2 used)	AW

PACKING PARTS
(NOT REPLACEMENT ITEM)

SPAKC5526PEZZ – Packing Case —
SPAKX0240PEZZ – Buffer Material —
SPAKP0055PEZZ – Polystyrene Mat —

CABINET PARTS LOCATION



SUPPLIED ACCESSORIES

ACCESSORIES

RRMCG0756CESA R Infrared Remote Controller BA

ACCESSORIES(*NOT REPLACEMENT ITEM*)

UBATU1032CCN 1 – Dry Battery, Size AAA (2pcs.) —
TiNS-4427PEZZ – Operation Manual —
TMAPC3727PEZZ – Service Map. —
QTANJ0005PEZZ – Terminal —

CABINET PARTS

1	CCABA2 109WEV0	R	Cabinet Ass'y, Front	BU
1-1	*Not Available*	–	Cabinet, Front	—
1-2	GDORF0105PESA	R	Door	AN
1-3	GLEGP9004PESA	R	Leg (2 used)	AG
1-4	GMADT0057PESA	R	Window	AL
1-5	H DECA0006PESA	R	Speaker Decoration (R)	AG
1-6	H DECA0007PESA	R	Speaker Decoration (L)	AC
1-7	HiNDP0086PESA	R	Indication Sheet	AG
1-8	PKAi-000 1 PE00	R	Push Latch	AF
2	GCABB2106PEKA	R	Cabinet, Rear	BQ
3	JBTN-0018PEKA	R	Button, Stand-by	AE

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